

# Institut Pasteur Korea - Hakim Djaballah, CEO

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*Hakim Djaballah arrived to Institut Pasteur Korea in July 2014 with an aim to return to the French institute's focus on infectious diseases. He outlines the complexities of Korea's research industry and stresses the importance of knowledge-sharing for success.*

## **What have been some of the most important changes made since you arrived here?**

I want to implement greater collaboration within Korea as a means of making IPK the main stakeholder in the country in terms of drug discovery. Secondly, our institute needs to become a hub of access to the outside world, connecting Korea through our institute to industries in the US and Europe where we have connections with the relevant people there.

## **Where do you see Korea on the global stage of research and innovation, and what can be improved?**

In my first few months here, I see that Korea is at a very strong junction that could go two different ways. The country has extremely good opportunities, particularly in terms of its terrific infrastructure throughout, both in the public and private sectors. However, Korea is relatively new to this business and they have set some very ambitious goals for themselves that cannot be achieved easily. The days of bringing in technology and being successful are gone. As such, this juncture is very critical for the know-how and ability of Korea to attract expertise and transfer

know-how for local companies, universities and institutes. Korea is not really a known destination for professionals. I took a risk in coming here and by being here I can attract others to join. Without the presence of know-how, it is hard to achieve goals like Pharma Vision 2020. Drug discovery is not a textbook recipe anymore: 90 percent of it is luck and serendipity.

With this junction, I also find the sheer energy of young Koreans to be amazing, including those in IPK. They are all ready to succeed and I hope that my presence here helps facilitate cultural change in terms of how we do R&D. The infrastructure for basic research is already in place and translational research is beginning to take off, but the infrastructure to take that into a product still does not exist. Compared to other countries with facilities for API production, Korea is still at the starting line. It does not mean they cannot achieve it; Korea is geographically attractive and the country just needs to invest in building the industry scale infrastructure to produce APIs.

Korea offers a great opportunity for clinical trials as well. We have a genotype of different populations all together and multinationals can test their drugs to here to determine their benefits for an ageing population. However, Korea is one of the most difficult countries in the world to register a drug to sell internally. They also have to be very vigilant in terms of healthcare costs, given expensive medications, a limited budget and an ageing population.

I think the success of Korea will depend most on know-how and minimizing the barriers for expertise to come here. Samsung has learned how to bring in that core expertise and make it part of the family. Korea's life science industry must do the same. I am sure they may view it as a waste of an investment but in fact it could be one of their best investments.

In all fairness, there is nothing wrong with imitation. 15 or 20 years ago, generics would have never crossed our minds, but that has all changed. Innovation with new chemical entities (NCEs) is entirely different. If you do not have the core expertise to initiate that process, you will not find it. From my exposure here, I am cautiously optimistic for them to achieve that. The FDA(USA) regulatory authorities have approved about 1,200 NCEs, but none of those were discovered by true hard research; most were discovered accidentally. We have to be open to the idea that drug discovery remains a serendipity puzzle.

### **What are some of IPK's most important research projects?**

Since I arrived, I have refocused our research. Historically, Institut Pasteur has been driven by infectious diseases, and I want to return to those roots. We will dedicate almost 90 percent of our work on infectious diseases and we will also continue with our oncology program. For infectious diseases, IPK has one of the most advanced programs in HCV, which is a huge problem in Korea.

We have a very exciting molecule that is in preclinical development funded through the Korea Drug Development Fund. Some think Sovaldi has cornered the market for HCV, but Korea actually refused to sign Gilead's letter of agreement in terms of pricing. Having an HCV product that will fulfill the needs of the Korean market that can help the government with costs would be a huge accomplishment for IPK to give back to Korean society.

We also have a full program for influenza combined with other respiratory viruses, but the new exciting and challenging project we are establishing here is focused on Ebola. IPK recently became part of the Ebola task force at the Institut Pasteur, which has been very active in this area this year. IP has a well-connected network in Africa, so we can get field data and blood samples to understand disease diagnostics and discovery. IPK can bring in dismantled viruses that we can screen for compounds for already approved drugs and we can repurpose them for the disease, or we can discover novel ones. I am more interested in understanding the host virus interaction - finding genes in humans that facilitate infection and spread the virus. That could potentially be a new point of intervention in terms of vaccine, cure or even diagnostics. My aim is to achieve that and create an accurate diagnostic kit in under an hour. The danger is that many people are carriers but show no symptoms. The immune system might be controlling the virus, but if you get influenza the immune system is weakened and ebola takes over.

Another project that will have huge economic impact in Korea is tackling rabies for livestock, which affects the growth of cattle and chickens. We are trying to identify a new molecule that can be used to reduce this problem and to create a reference site here. Pasteur Paris is actually a reference for Europe, and IPK is determining if the movement of rabies is the same in Korea.

In oncology, IPK collaborates with Asan Medical Center to tackle hepatocellular carcinoma, which is extremely prevalent in Korea and the surgery for it is insufficient. We try new methods of screening instead of classically killing the tumor. In the short to medium term, some of our projects for next year will focus on antibacterial resistance. Our focus will be on drug discovery and diagnostics with the hope to identify new molecules that can make the transition into clinical development and biomarkers. Obtaining biomarkers for ebola will be huge. It means we can stratify the African population in terms of who is vulnerable and who is not.

### **How do you find the right people to achieve these goals?**

In terms of mainstream talent, such as chemistry, it was very easy to find US-trained scientists who have been through some of the best chemistry labs in the world. Certain disciplines are very hard though; the good researchers in Korea are not here because they can find jobs elsewhere. Some

people call this a “brain drain;” I call it a headache. We are building our bioinformatics group and it is physically impossible to find bioinformaticians in Korea. It is a totally neglected discipline for reasons I do not understand; Korea’s IT world is great, and bioinformatics is the same thing. Looking for talent outside Korea is not difficult; convincing them to move here is. Korea is not well known for this, and is poorly advertised in terms of its livability for foreigners, which is relatively easy. Recruitment in Korea is fragmented in terms of expertise. Without the network, it is challenging.

**Do you plan to expand the number of international collaborations that IPK engages with to further broaden its international scope?**

Yes and no. Getting more partnerships is always welcome, but simultaneously I have to create a happy medium of balance between the work that we do, the work that those companies want to do, and the interest from local pharmaceutical and biotech companies. Pharmaceutical companies in this part of the world are very interested in working with us because they have already decided they do not want to build infrastructures for screening. An organization like IPK has the expertise to do the work. It is helpful to build partnerships with Roche or Sanofi, but at the same time I need to balance it with our own internal programs and with collaborations within Korea.

**IPK is recognized as a world leader for biotech licensing revenues. What are your expectations in terms of taking advantage of what is considered a fairly strong biotech sector?**

Korea is one of the few countries with vast amounts of public money in biotech and pharmaceuticals. For us, the model is very simple. We will deploy our biology, identify molecules, use our chemistry capabilities to optimize them, and then commercialize the molecule. My hope would be to license those molecules to Korean companies as new entities that they can develop. Any molecule at that stage does not generate much revenue in terms of registered income. It is a symbolic entrance to the negotiation. The money you make is milestone-based; when you reach certain points of development, the royalties bring the success. The other option is to spin off companies. Korea has a very strong VC presence and ironically they prefer to make their income through interest or short-term lending rather than actually investing in companies.

IPK succeeded in spinning off a company called Qurient, which has been an outstanding example of publicly-funded innovation. By generating value around small molecules, we can convince investors to establish a company and use VC money to develop molecules, potentially for the Korean market. If that molecule turns out to be unique and has special values, that company will either be acquired

or the compound will be licensed to someone else for development. We are balancing between the two, and spinning out is more advantageous than licensing. Sometimes licensing molecules kills companies because the in-licensor does not want competition.

### **Where can we expect to find IPK in five years?**

Having a local HCV drug would be a tremendous success for my tenure. Addressing neglected diseases, especially for ebola, in the diagnostic area would also be a huge accomplishment. Discovering new molecules would be even better. But my main goal is focused on education and training. I want to provide an opportunity for people to train at my institute and feel that the values we use here to do research are Western. This opens the opportunity for people to be creative and to talk. Scientists alone have no value, but scientists talking to each other have great value.

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