Young-Shik Cho – Chairman, SD Biosensor

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Young-Shik Cho, chairman of SD Biosensor, recounts his journey leading diagnostics companies and expanding their offerings through R&D. Cho also compares the challenges of the Chinese market with the potential in the Indian market and offers his opinion on the role of diagnostics in post Covid-19 healthcare.

Cho Young-Shik, you have led a number of diagnostics companies over the years. What has been your journey within the diagnostics market?

I have been working in the diagnostic field since 1984. My career began as an R&D researcher, a role I held for 12 years. Later, I decided to establish my own diagnostic company, and then established the company SD in 1999. We produced many different kinds of rapid testing, for illnesses such as HIV, Dengue and Malaria.

My priority was to invest all of my energy into R&D so that we could expand our capabilities across many areas. This laid the foundations for our very strong position in the POC (point of care market), where SD was a leading player. By 2010 we were competing with American firm Alere Inc for market leadership for HIV test kits.

In 2010, I sold SD to Alere Inc and spun off SD Biosensor to create a separate entity which I continued to run. In the beginning, SD biosensor produced only glucose monitoring diagnostic systems, having agreed not to compete with Alere Inc for the five years post acquisition.

Once this time frame passed, I began developing many advanced products, with my eye set on the molecular POC business. This year, we also began producing Covid-19 antibody rapid testing, leveraging my experience developing tests for other new viruses like SARS, MERS, and Zika. In fact, I have recently received an award for the Covid-19 testing that we have developed.

What is your main area of focus and offering?

Our main area of concentration is POC testing. Even though we have some rapid testing, these are qualitative and not quantitative tests. Many customers and some hospitals and laboratories want the option of quantitative testing capabilities. For this reason, we moved to launch the FIA (fluorescent immunoassay) test to satisfy those demands.

Even though we launched some FIA tests to the market, confirmation tools for their POC site are in demand. We wanted to have some immuno-assays and rapid tests, and also some more accurate FIA tests, in addition to a POC molecular platform.

We also have another business model for glucose monitoring. In the last 10 years we have produced these for pharmaceutical and medical instrument chain stores. However, now we are focusing on the IVD (in-vitro diagnostics) business.

The molecular diagnostics market is highly crowded, with the presence of several large multinationals, such as Roche Diagnostics and Abbott. What is SD Biosensor’s competitive advantage?

One of our key innovations was the decision to apply isothermal technology to some of our products, which can push testing times below 30 minutes. This is a very important and critical element when competing with current market leading molecular purity products.

We also wanted to offer multiplex tests. Currently, the market leading company is US based company Cepheid, a subsidiary of the Danaher corporation. Their kits can detect 4-5 pathogens in one device. Our ambition is to surpass this and provide detection for up to 11 pathogens in one device, all within 30 minutes. We had this prepared by last year but decided that we wanted to

further modify our offering, adding an isothermal and real time PCR (polymerase chain reaction) system too.

As a smaller player in the molecular market, we needed a strong offering to enter successfully. This is why we are adding real time PCR function in one cartridge and one machine. This year we will launch an isothermal POC cartridge and a real time PCR cartridge in one system. Our POC system can afford to test both qualitative and quantitative testing. We will also expand our Covid-19 testing.

What drives your decisions vis a vis the direction of expansion in SD biosensor's testing portfolio?

I have experience with ELISA, PIA, and molecular purity to give a non-exhaustive list. I also have wide contacts in the industry with researchers across these diagnostic platforms, developed over more than ten years. If we decided to develop new products, our R&D can finish new product development within one month provided we have a strong antibody candidate.

In addition, I currently run two companies. The first is an animal diagnostics company, Bionote, and the second is SD Biosensor, the human diagnostic company. Each has a separate R&D centre. Within SD Biosensor, we focus on platform development, such as PIA, and molecular purity. However, Bionote can use the systems and platform technologies from SD biosensor and apply it within the animal diagnostic field. At the same time, Bionote, with much experience developing antigen and antibody technology, can transfer all reagents to SD Biosensor to be applied to human testing. Thus, the two companies are very synergistic and can influence one another.

You have established subsidiaries in China and India. How would you assess their performances?

Our success in China has been limited, having encountered many problems on entering the Chinese market for human diagnostics. Instead, we are now modifying our offering and exporting huge amounts to the Chinese market for animal diagnostics. We have some POC testing kits which are now leaders in the Chinese veterinary market.

Conversely, India has been a real success for SD Biosensor. I have been operating there for almost 15 years and now have a local factory and sales force of 120 people, with 300 employees in total.

We have been very successful in India because infectious disease diagnostics are in high demand.

We are leading with our real-time POC agent in India with over 2 million tests and the number one market share. We have also recently registered our Covid-19 antigen test and have already sold more than four million to the Indian national and regional governments who are using them as a screening system. We wanted to provide very low-price products in India because the market is price sensitive. We are also keen to expand our production locally. This year we need to produce more than 50 billion tests for HIV and Malaria to be sold in India.

All in all, we have a good team working there and are comfortable doing business. The market has a lot of potential for SD Biosensor.

Prior to the Covid-19 pandemic, diagnostics was an overlooked area of healthcare. Do you believe that there could be a silver lining in that the profile and importance of diagnostics is raised in post Covid-19 healthcare systems?

There are so many new diseases that have appeared since 2003, such as flu, MERS, Zika, Ebola, and now Covid-19. Most of the viruses have originated from animals and later jumped to humans. In the past, these would have been localised outbreaks, but given the expansion of mass transportation, coupled with growing population densities in cities, the opportunity for viruses to spread globally and lead to a pandemic is now very high.

With no existing treatment or natural immunity, we have no prior tools to protect from a new virus. Consequently, the first line of defence becomes diagnosis and fast screening to bring the situation under control. Traditionally, vaccines and treatments are the main focus, with diagnostics playing a secondary role. However, diagnostics are firmly in the driving seat right and the importance we play has become very clear.

Many governments now want to invest and expand their diagnostic capabilities. There is also growing interest from capital to invest in diagnostics companies. Within ten years, there is the possibility that this increased support and funding may help to create a new and more innovative business model and platform for diagnostics companies to build and develop from.

Making diagnostics lucrative will also aid the cause of provision medicine. The gains from Covid-19 testing will be reinvested into precision medicine after the pandemic is under control.

How important are international partnerships in SD Biosensor's operations?

We have two types of partnerships, sales and R&D. We have one exclusive distributor per country, with 120 distributors worldwide. We also have our own sales network in India, Indonesia, and the USA. Nevertheless, we are still a small company. We want to expand our sales network further.

Regarding R&D, we have recently been approached by some multinational diagnostics companies, showing an interest in collaborating. We have finished negotiations with one partner and an announcement is due imminently. This will lead to an expansion of our business and our offering. We hope that in the future we can make some deals in the field of molecular purity too.

Locally, we have strong collaboration with Korean universities, and with specific R&D partners. We have received R&D funding from US based projects for a collaboration to develop a Tuberculosis antigen test using a urine sample, overcoming the issue of low sensitivity. We will expand the international co-development of this platform.

Which international markets are priorities?

While our former star product was rapid testing, we are now strong enough in PIA and molecular purity testing that we no longer have a single dominant business segment. Thus, we are targeting different markets for each product. For PIA and molecular purity testing, the strategy is to enter into the USA first and then Europe and Africa. However, for rapid testing kits, we will focus on the African market first and the US market later.

How easily can you find the right talent for your R&D operations?

Even though there are many well educated and highly technical professionals in Korea, we rely on very specific expertise for our operations. I have worked with some university professors and their PhD graduate students. We hire them and then provide them with the skills to operate within a specific field of our company. This allows them to improve their technology and experience. Many of our employees working in R&D have travelled to international conferences and exhibitions to widen their knowledge. When we need new technology, we are open to collaborations globally to align with experts in whatever new field is needed to improve our service and products.

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