

Interview with Swee-Yeok CHU, CEO & President, EDBI/Bio One Capital

14.11.2012

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As the CEO of EDBI since late 2008, what would you say have been the main developments of the agency during this time?

EDBI is the strategic corporate investment arm of the Singapore Economic Development Board (EDB) and we invest in very select industry sectors.

Investments in the Biomedical Sciences (BMS) are made by Bio*One. We also invest in three other sectors. Clean Technologies, related to energy and environment; Internet and Digital Media; and a programme that focuses on Singapore-based companies, called the Strategic Growth Programme. This entails investing in larger companies that are ready to grow globally. These companies are revenue generating and we invest in them to be champions of the Singapore brands globally. These are the new initiatives that we have put in place since I came on board.

What are the main synergies that have been established between EDBI and A*STAR?

The goal of the Biomedical Science Initiative (BMS Initiative) in 2000 was to develop a sustainable BMS industry in Singapore. Three agencies were responsible for this: A*STAR, which promotes local research and talent; EDB which attracts investment into Singapore; and Bio*One, under the EDBI. Bio*One was responsible for direct investments in select local and foreign companies to help them grow, and contribute to Singapore's BMS industry.

In so doing, Bio*One was very closely involved in the policy aspects of the BMS Initiative together with EDB and A*STAR.

Many of the companies we invested in have significant collaborations with the A*STAR Institutes.

What is the value that biopharma companies create and how do you rate their success?

We need to look at the reasons the BMS Initiative was put in place in order to determine if and how successful the BMS Initiative was.

Prior to 2000, Singapore was primarily a location for Active Pharmaceutical Ingredient (API) manufacturing. For the BMS industry to be sustainable, it needed to be more than one of the best global locations (along with Puerto Rico and Ireland) for manufacturing. We needed to go up the value chain and develop BMS R&D capabilities in Singapore. Bio*One's role was to catalyze and support the initiative of building private R&D capabilities.

In the early years, Singapore only had a couple of BMS research institutes. The first was the Institute of Molecular and Cell Biology (IMCB) that was set up in 1989. It was only in 2000, under the BMS Initiative, that a coherent and holistic approach to building the pillars required to support R&D was put in place. Hence, the Genome Institute of Singapore (GIS), Bio-Processing Technology Institute

(BTI) and Institute of Bioengineering and Nanotechnology (IBN) were founded.

To build BMS capabilities in Singapore, many "firsts" were brought about through BioOne's investments. For example, we set up S*Bio, the first private R&D company in Singapore, in a joint venture with Chiron, then one of the largest biotechnology companies in the US (Chiron was later acquired by Novartis). We spun off the first natural product research company, Merlion. We then went on to set up the first vaccine company in Singapore, Singvax, which we then merged with Inviragen. We also set up Maccine, the first preclinical company in Singapore, and also Fluidigm, the first manufacturer for Integrated Fluidic Circuits (IFC).

BioOne has achieved many significant "firsts", and built substantial developmental capabilities in the BMS value chain. The capabilities built through these companies are now entrenched in local industry.

How time consuming is setting up all of these foundations?

Many people do not understand how long it takes to build a BMS industry. I am often asked, "Is the policy successful, or is the BMS Initiative successful?" This is not an industry for the faint-hearted, but one that requires a very long-term perspective. The BMS Initiative was started only 12 years ago, and the industry is beginning to take off. "Success" can be better measured 20-30 years down the road, not 10. Massachusetts, a BMS hub for example, recorded its first collaborative initiative in 1961. The first company there that was set up was Biogen, 17 years later. So clearly, it takes a long time. Moreover, Singapore is a city-state, and hence a better comparison might be with other cities, and not other countries.

Essentially, this is an industry that has a very long gestation period. Patience is necessary because it takes time to build capabilities and infrastructure. We are getting there, but it is a long journey. We must capitalize on this momentum and continue to forge ahead.

You mentioned some companies that BioOne Capital invested in - what happened to A*Bio?

A*Bio was another first for BioOne in building biologics capabilities in Singapore.

In the early years of the BMS Initiative, we reviewed the pipeline of drugs that were to be approved by the FDA and found that many were biologics. At that time, there was no biologics manufacturing capability in Singapore. Our manufacturing efforts were primarily centered on chemical-based APIs. When we started engaging companies to manufacture biologics in Singapore, they asked, "How do you expect us to come to Singapore to manufacture when you do not have such capabilities?" So we decided to build these capabilities by spinning off a pilot facility, A*Bio, from the then Bio-processing Technology Center (subsequently renamed Bio-Processing Technology Institute (BTI)). The objective was clear - to build capabilities in bio-processing and biologics manufacturing.

We continued to engage and commercialize biologics companies, a notable one of which was Lonza. In 2005, Lonza set up their commercial facility in Singapore as a joint venture with BioOne. The key factors Lonza considered in setting up the facility here included Singapore's robust IP framework, and the presence of capabilities within A*Bio. Lonza was also assured that BioOne is an experienced investor in BMS and that we had existing investments in the biologics sector.

The biologics story in Singapore is best described as a journey where we identified the important components, put them in place, and achieved the outcome we wanted for Singapore. To start something, you have to seed it, and then grow it - A*Bio was that seed. With that, came Lonza and thereafter, the many other commercial biologics companies that have made Singapore their home today.

A*Bio continued building capabilities and undertook a number of Good Manufacturing Process (GMP) projects for process development and clinical scale manufacturing. We subsequently found a partner which was keen to leverage A*Bio for their products in China. We initially sold some of our shares to them, and they eventually purchased the rest of the company from us. While we have a strategic component, we also have a financial mandate.

Do you believe the investments in the industry have paid off?

Definitely. Without giving numbers, the investments we have made have brought about more investments and significant spin-offs to Singapore by growing capabilities here. A large number of people have been trained by these companies, and this has played a key role in attracting other companies that were thinking of coming to Singapore.

What are the criteria to invest in a company?

Having catalyzed and built capabilities in the private sector R&D, Bio*One now focuses on later stage companies with products. For example, medical device companies that are looking to expand into Asian markets. EDBI and Bio*One are active investors who work very closely with our portfolio companies to help them navigate in Asia— from dealing with cultural differences, introducing them to the correct decision makers, to raising funds when they need to. It is in our DNA to work with other investors. We have built a very strong base of co-investors through our networks around the world. Many companies approach EDBI because we are a neutral, long-term strategic investor. We are aligned with their plans to grow in Asia and globally.

How attractive are Asian companies for EDBI today?

We are actively looking at investment opportunities in the region. Countries such as China and India are large markets. For example, China will be one of the largest pharmaceutical markets in the world. Their domestic market has many emerging companies — both in medical devices and pharmaceuticals. In 2009, we invested in our first Chinese-based drug distribution company. Besides recognizing China's huge market size, it allowed us to assist our portfolio companies by linking them to partners in China. Other than China, India and Indonesia are interesting for us as well. We therefore actively engage the players there.

As an investor in Singapore, what are going to be the main challenges in the future to maintain growth?

Many local investors — focus on revenue growth. The BMS sector requires an investor to assess companies based on their potential — something that savvy investors are able to do. Being able to appreciate this would enable promising companies to be sold for multiple times their investment cost even before their products have been brought to market.

Generally, local investors are more concerned with short-term gains and are less prepared to invest in BMS with its long investment horizon. This makes it difficult to find like minded investors in Singapore with the ability to hold on to long term investments.

Historically, when portfolio companies needed to raise funds, they would look to the US and Europe. It is therefore important for Bio*One to continue building partnerships and strong alignment in these markets, as well as with our collaborators and partners around the world.

The Singapore investor has become increasingly savvy with BMS investments over the years, and there are now local investors who are more prepared to co-invest with us.

Since a majority of fund raising is now in Europe and America, do you think that the perception of Asian investors on further investing in Life Sciences will change?

Yes, it will. With the downturn, we have already seen US companies experience difficulty raising money from US funds. They often come to Bio*One/EDBI, very keen for us to invest in them, and lead the round of fund raising for them.

From a company financing perspective, it is important to have wide networks of contacts and potential investors. This would enable the company to approach the right decision-makers when the need arises. However, it is usually difficult for a young company to build that wide network, and this

is where we come in to help to link our companies with potential investors worldwide. Looking at our portfolio, you would immediately notice that our companies have a global base of credible investors.

What are the key elements that have enabled Singapore to be where it is today?

The cohesiveness between the various government bodies is our key strength. Being small and compact gives Singapore the advantage of enabling the various agencies to make decisions on strategies and policies in an efficient yet holistic manner. A very strong IP infrastructure is critical to developing knowledge and technology intensive sector such as BMS. Also, despite the small numbers, we have a very heterogeneous talent pool. A sector like BMS benefits greatly from having heterogeneity in the talent pool, which allows for the flow of creative ideas when developing a product or a service.

These have been, and continue to be Singapore's strengths.

Finally, EDBI/Bio*One as a potential risk-sharing partner, is a strong factor that has, and continues to contribute to Singapore's leading position today.

What have been the most interesting and challenging aspects of working at EDBI for the last four years?

The most interesting aspect has been building new teams within EDBI, and investing in high growth sectors of the economy. The strategic mandate of developing industry, in addition to the financial mandate, makes this job fulfilling and meaningful. What is most challenging must be finding like-minded co-investors, with a long term perspective to invest in the BMS sector. But as I have mentioned, this has improved over the years.

What is your final message to our readers?

The BMS sector has grown, and it is now a significant contributor to Singapore's economy. Over the years, we have put in place the necessary components and infrastructure, developed capabilities, built the Biopolis, and grown the industry to include MNCs and innovative growth-stage companies. We will continue to harness the momentum we have built, and forge ahead with our drive to build a vibrant and sustainable BMS industry in Singapore.

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