Interview: Lawrence Gan – President & CEO, Taiwan Development Center for Biotechnology (DCB), Taiwan

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Lawrence Gan, President and CEO of Taiwan's Development Center for Biotechnology (DCB) explains his vision

and strategy to enhance DCB's R&D expertise by adopting some of the best practices of the corporate world.

You became head of Taiwan's Development Center for Biotechnology after having held prestigious positions in the US among some of most innovative biopharmaceutical companies in the world, including GSK, BMS, Boehringer Ingelheim, Takeda, and Biogen. What was the rationale behind your decision to come back to Taiwan?

After having studied and worked for more than 30 years in the United States, I wanted to bring my contribution to the development of my mother country's biotech sector. As head of DCB, I now have the opportunity to coach and benefit our young scientists with the experience and expertise I gathered among these large biopharmaceutical companies.

Prior to accepting this role, I was notably approached to found a new drug discovery and development company in Taiwan. As appealing as this opportunity may sound, I thought that – after having operated for my entire career within the pharmaceutical industry – it would be more impactful to work towards the development of the DCB and collaborate with the ~400 scientists (260 in R&D) it holds.

What do you see as the role of DCB in Taiwan's biotech landscape?

Despite being a government-backed NGO on paper, DCB truly operates as a new drug discovery and pre-clinical development company. Although we do not directly handle the clinical development of the molecules we bring to the preclinical stage, DCB's project managers and leaders are now part of joint steering committees that supervise the clinical trial phase. We can then directly bring our expertise to the company handling the clinical development of these molecules, but also receive direct feedback from our business partners that will allow us to continuously improve our delivery.

Over the last decade, DCB has been exclusively focused on early-stage drug discovery and development through a three-fold approach. DCB holds world-class expertise in the research and development of biologics and botanical drugs, in addition to small molecules. A few months before I stepped in, DCB received a substantial funding injection from Taiwan's Ministry of Economic Affairs (MOEA) to become the research center of reference in the country for the development of protein drugs.

What are the main strengths and areas for improvement that you identify in DCB's research capacities?

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When joined DCB, I obviously started with reviewing all the research projects our organization was conducting, and discussed their advancements with our project leaders/managers. Without any doubt, the quality of our projects and the level of expertise of our team leaders are at least as impressive – if not more so – than what I was used to in the US corporate world. DCB scientists' skills are second-to-none when it comes to study design, technology application, and the implementation of complex molecule development plans.

Although the number of Taiwan's universities has skyrocketed to more than 150 over the past few decades, one should remember that there are 114 colleges and universities in Massachusetts alone. What is ever more striking about the quality of DCB's researchers is that most of them have been exclusively trained in Taiwan, where more than 5000 biology scientists graduate from our universities every year. This aspect is at once impressive and detrimental. Whereas it clearly demonstrates the utmost quality of training that Taiwan's universities can offer, it also means than some of our researchers may lack international exposure and research experience in other advanced countries of the world.

Given that you personally hold this international experience, what is the new research approach that you have strived to instill among DCB's teams since you took over?

In addition to myself, there are other R&D specialists trained in the US who have recently joined the DCB. With this experienced team, our objective is to ensure DCB remains as aligned as possible with the best international research standards.

This notably relates to fostering the development of "a sense of urgency" in our research culture. To some extent, when I joined, the DCB still displayed some of the frailties that affect most government-backed organizations in the world; with unnecessary administrative processes slowing down our scientific delivery. Without compromising on our legal or scientific requirements, we do not let any superfluous red tape hinder the identification of our biological targets and their development.

More importantly, this "sense of urgency" that I want to put at the core of our drug development approach takes its roots in the indisputable fact that patients all over the world are waiting to access the treatments we strive to develop. As researchers, we need to keep in mind that our daily work contributes to bringing these game-changing treatments one day closer to the market and to patients. As a result, a molecule cannot stay in development for five years in DCB's laboratories, knowing that we only handle the discovery and preclinical stages, or this drug will most likely be obsolete by the time it eventually reaches the market.

In this regard, how have you been concretely adapting DCB's processes to cope with this new "sense of urgency"?

In terms of competitiveness, DCB now runs its R&D projects following the exact same approach as any leading Western biopharmaceutical company. For example, our business partners are now largely involved in our reviewing committees to provide us with a better understanding of the international competitive landscape and help us determine how we compare to other R&D teams working on similar therapeutics. Besides ensuring we maintain a development pace aligned with the highest standards globally, it also helps us to more accurately evaluate industry interest around a given compound, and assess whether we should pursue its development or not. This kind of strategic thinking is common in the corporate world but it was not truly part of DCB's research culture until very recently.

DCB holds 260 R&D scientists operating in three different areas (pharmaceuticals, biologics and botanic drugs). Given this substantial research capacity and the quality of our researchers, we cannot content ourselves with sporadically bringing molecules to the market. We have set up

challenging but reachable R&D goals and now target bringing at least three molecules per year to the market.

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Implementing R&D goals also implies adapting our project management approach to ensure we are able to reach these objectives. As a result, we are now extremely focused on our pipeline flow: we closely keep track of project maturation to ensure we more swiftly bring our molecule from the discovery stage to a satisfying level of R&D readiness. We then implemented monthly pipeline reviews to ensure the advancement of all our projects is controlled at least on a quarterly basis. On the other hand, we suspended more than half of our exploratory projects to focus and boost the development of the most promising ones.

Finally, we want to accelerate the international development of DCB. In the US, we already rely on partner company to register the IP of our molecules. In the meantime, we want to generate more spin-off companies, following the successful way paved by Eirgenix, a DCB spin-off focused on the development, analytical testing, and cGMP manufacturing of biopharmaceuticals that recently IPOd on the Taiwanese TPEx Emerging Stocks Board. Additionally, in October 2016, a new company focused on biotechnology safety testing with clients in Japan and Korea spun off from DCB.

What are the main fields and therapeutic areas you want to prioritize in order to consolidate DCB's international leadership in the upcoming years?

President Tsai has established the pharmaceutical and biopharmaceutical sectors as one of the key pillars of Taiwan's new economic model. As part of this development plan, our government just announced that a substantial part of next year's budget (around 13 percent) will be specifically allocated to support flagship projects from these innovative industries that are set to drive our country to new heights. Precision medicines, including companion diagnostic devices, are eligible to be supported by this exceptional fund.

Focusing on precision medicine is not new to DCB, and our research efforts in this area have already delivered some interesting outcomes. For example, in August 2016, a selective RAF kinase inhibitor developed by UBI Pharma via a technology transfer from DCB received IND approval by the US FDA. In this field, we notably want to leverage Taiwan's world-class strength in ICT technology to develop molecules that could be used in association with medical devices. In addition, we are broadening our collaboration with the Industrial Technology Research Institute of Taiwan (ITRI), whose biologic department is particularly experienced in cell therapies, including stem cells and cell banking.

As with many biopharmaceutical companies in Taiwan, DCB has historically focused on oncology drugs, which still represent around 70 percent of all our development projects. Nevertheless, in Taiwan, the share of the our population aged 65 and over is set to increase from about 13 percent today to almost 25 percent by 2025. This means we need to adapt our research approach to these evolving healthcare needs and increase our work in related therapeutic fields such as CNS (including Alzheimer's), immunology, and metabolic diseases.

In addition to your role with the DCB, you also head up the Biotechnology Pharmaceutical Industries Promotion Office (BPIPO). What is your vision to fully leverage this two-fold responsibility?

Under the supervision of Industrial Development Bureau (IDB) of MOEA, the BPIPO operates as a one-stop-shop office that aims to accelerate the development of Taiwan's biotechnology and pharmaceutical industries and enhance our overall industrial competitiveness. The organization provides consulting services, promotion activities, coordination and development support and aims to create an optimal developmental environment for the life science industries in Taiwan. Both local and international companies can benefit from its services. The long-term goal of the BPIPO is to assist Taiwan in staking out a place in the global biotechnology development and commercialization value chain.

As head of these two organizations, my objective is to ensure that the R&D branch of Taiwan's biotech capacity, namely the DCB, is fully integrated with its business development counterpart, the BPIPO group and the rest of the business development (BD) team within DCB.

By integrating the DCB and BPIPO's scopes of action, we can truly become a world-class commercialization center providing game-changing services throughout the entire value chain, from drug discovery and preclinical development to commercial and regulatory support. While DCB would take care of the R&D part, BPIPO and the rest of business development (BD) team can guide start-ups and more mature companies through the IND stage before offering a joint-supervision of the clinical development and marketing phases.

I insist: we truly hold the opportunity to become a biotech commercialization center that most countries in the world would envy, if we are able to bring the BPIPO and other innovation and technology-oriented groups within the DCB closer. These groups are focused on promoting industrial development; hence they hold the expertise we need to fully leverage DCB's R&D savoir-faire.

The title of our 2017 report on Taiwan's healthcare and life sciences report is "Boosting the innovation momentum." What does this title mean to you?

We are committed to the development of innovative treatments because patients need them all over the world. This stands as the first and foremost reason behind our ambition to become a globally competitive biopharmaceutical R&D center. Eventually, return on investment will come along for Taiwan's biotech companies, and there are plenty of recent success-stories amounting to billions of dollars that prove it.

If we want to reach this fundamental objective, we need to remain focused on the quality of our work and continue to tirelessly raise our standards and step up our technology expertise. If we do so, I have no doubt we will be able to bring game-changing products to the global market, improving the lives of millions of patients. Nevertheless, we need to remember that behind all biopharmaceutical success-stories, you find experienced, talented, and highly committed R&D teams holding the utmost levels of technology expertise.

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