Interview: Weng Si Ho – Director of Biomedical Sciences, EDB, Singapore

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Attract, Transform, and Create. The Singapore Economic Development Board's (EDB) director of biomedical sciences, Weng Si Ho highlights these three actions as the primary strategic focuses of the organization from this point forward and explains how, ultimately, they serve to help sustain Singapore's future value proposition to healthcare and life science companies.

What items have been occupying the bulk of your agenda since assuming this role in January 2016?

Singapore has done well to date, but now the question is how do we remain competitive and evolve alongside the industry's own development? Healthcare models are shifting, particularly with aging populations and increasingly pervasive chronic diseases. In Singapore, it is about creating the right environment so that companies can benefit from the capabilities that we have built. Companies then adopt and pivot to new healthcare models, in order to continue growing their businesses.

Our overall strategic framework is Attract, Transform, and Create (ATC). "Attract" has us very much focused on growth, but by selectively attracting the type of activities that align with Singapore's priorities to ultimately ensure sustainable growth.

"Transform" focuses on working with the already established base of companies in Singapore to adopt the latest trends and technologies to stay competitive and remain sustainable in Singapore in the long-term.

“Create” is our latest agenda, and is specifically targeted at cultivating new businesses from Singapore. Startups are certainly one aspect of that objective, but of course it’s also about helping MNCs and large local enterprises create new lines of business out of Singapore. Given the country’s capabilities in not only biomedical sciences, but all the other complementary sectors as well, we hope the close integration and co-location of industries can make some magic happen.

This is especially relevant in the greater context of how healthcare is evolving. In the future, healthcare solutions might not only be delivered by just incumbent healthcare players—certain partnerships may need to be taken into consideration. With the advent of digital technologies effectively disrupting care models, we may start seeing the surge of more companies from, for example, IT or insurance entering the mix, alongside traditional pharma, medtech, and nutrition companies to meet modern day healthcare challenges.

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Spanning all the sectors under EDB’s scope, how do biomedical sciences align with the organization’s primary interests?

We are one of the key sectors in Singapore, as we’re now the second largest contributor to manufacturing output. This is alongside the country’s other industry pillars including chemicals, electronics, and engineering.

Currently, about 3.5 to 4 percent of our GDP is currently attributed to the biomedical sciences manufacturing sector, amounting to roughly SGD 27 billion, of which SGD 16 billion is coming from the pharma industry and SGD 11 billion from medtech. In terms of manufacturing workforce, the biomedical sciences employs more than 18,000 workers, with the medtech sector typically requiring more people—>12,000 to pharma’s >6,000.

Particularly invoking this concept of a “Future Ready Singapore,” what direction will Singapore’s biomedical sciences landscape now take in relation to national priorities?

Singapore is not a large country, so to remain competitive we need to always plan in a forward-thinking manner. In addition, we do have the luxury of a stable government, leaving ample opportunities to consistently pursue longer term objectives. This is start in the latest Research, Innovation, and Enterprise Plan (RIE 2020)—the national budget for R&D, which is determined in five-year tranches.

For biomedical sciences specifically, the first phase was launched in 2000 and focused on building the foundation—putting in the core scientific capabilities, establishing the Biopolis, and establishing

fundamental pillars to build the landscape.

Phase two then was about moving into translational and clinical research—effectively taking the science from bench to bedside.

Phase three, which just culminated in 2015, focused on integrating all these capabilities and forging industry partnerships.

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The current phase will now focus on driving health outcomes for Singapore, not just economic ones. Together with the Ministry of Health (MoH), we have defined the top five therapeutic areas of national priority: diabetes, infectious diseases, cancer, sensory and neurological disorders, and cardiovascular diseases.

And where does EDB then come into play?

Of course as a development agency, we focus on the economic outcomes. We work closely with the MoH to bridge public sector resources with industry capabilities to drive the healthcare outcomes. It’s only by establishing that collective drive can we begin achieving our goals on both fronts.

As a case in point, the health minister recently declared war on diabetes, a pervasive problem in not only Singapore but across the entire region—60 percent of the world’s diabetics actually reside in Asia. In Singapore, it is predicted that one in three people will be afflicted with this disease at some point in their lifetime.

In response, we have organized different roundtables to bring together the unconventional industry partners together with government stakeholders and healthcare providers, to obtain a variety of perspectives on the same challenge. It’s about bringing together all encompassing stakeholders to collectively look at the patient journey, understand the points where intervention can and should take place, and ultimately develop the business model to drive these solutions. Essentially, it’s about bringing together all relevant parties together to brainstorm and discuss opportunities for collaboration towards tangible outcomes that meet the needs of both patients and Singapore.

Attracting investments has obviously been one of the main drivers behind the success of Singapore’s Biopolis and underlying biomedical landscape. What criteria will you now start imposing to determine the opportunities that are right for Singapore?

It’s about identifying the right profile of investments that work for us in Singapore—be that from an aspiration of our future Singaporeans standpoint, or from a skills profile standpoint. You can almost

consider the biomedical industry as the poster child for the type of investments we want to attract.

Using biopharma manufacturing as an example, we have more than 6,000 people employed in this specific sector, of which more than 80 percent are both skilled and local. These are the types of investments we want to attract to Singapore, as they seamlessly align with the country's educational aspirations with regards to developing high value-added skillsets and cultivating a competitive workforce.

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Do you foresee any innate challenges such as space or cost that might potentially inhibit investment commitments in the coming years?

That is exactly why we want to be more selective, as we know that costs in Singapore are not the lowest. For us, then it's about attracting the right profile of companies that are aligned with Singapore's cost structures, and require our inherent attributes. I'm referring to critical factors such as trust, IP protection, availability of talent, and reliable infrastructure. If it's just about cost, then I'm sure many other locations can provide a stronger appeal.

The biomedical sciences sector is extremely knowledge-intensive, requiring a very high skills profile. In some other sectors where the diversity is much greater is when there might be a starker difference in terms of project selections these days.

With a good majority of multinationals having already established a presence in Singapore, what industry segments will the selection profile now focus on?

There are always untapped segments. We're always going after greenfield projects from companies that are not here. But even for companies that are here, we see that their presence continually evolves over time. Using our manufacturing sector as an example, the journey originally started with the small-molecule API, in line with industry's overall trajectory. Over the years, it diversified into other areas such as tableting and other final-dosage forms.

The mid-2000s was when we had our first wave of biologics projects, and to date, we have anchored 9 commercial scale biologics plants in Singapore.

In the recent years, he have seen more investments in bioprocess development, next-generation facilities, and even new modality investments in, for example, cell therapies.

For example, Amgen is one of the latest biologics investments in Singapore. Amgen's "next-gen" manufacturing plant is very different from the traditional stainless steel facility. It utilizes single-use, disposable technologies, in addition to many of the traditional manufacturing technologies. The footprint is 75 percent smaller than conventional plants, but exhibits the same level of output. So, it's these types of investments that we see as the new generation manufacturing technology manifesting itself in commercial scale manufacturing plants.

The other recent investment example is AbbVie. They announced the establishment of two manufacturing facilities simultaneously, one for small-molecule APIs and the other for biologics. Right from get-go, their investments in Singapore were an onset of a campus that possessed both small and large molecule capabilities. And if their pipeline continues to move forward in this fashion, it will leave Singapore in a unique opportunity to manufacture future products such as antibody drug conjugates in the future.

Even existing customers can evolve along the way and implement new investments over time, and we are very eager to work with all the existing plants in Singapore to innovate and implement new manufacturing technologies to support new product introductions and improve operational efficiency.

Speaking from a broader perspective, what do you see as the single biggest trend currently influencing the way healthcare companies go about approaching and conducting business today?

We're starting to see early shifts in the traditional business model that has defined both the pharma and medtech industry for years. Increasingly, companies are thinking about how to respond to key industry trends whereby governments, payers, and patients are demanding outcomes and holding the industry accountable. Given the money paid for a product, the focus is now on whether or not it effectively meets the corresponding need. Different companies have responded in different ways, but most are essentially now beginning to think about how they can transition into model that's more centered on value-based, patient-centric solutions, beyond just pushing products into the market.

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For example, Philips has traditionally focused on selling existing devices such as blood pressure monitors and weighing scales, but they've also recognized that supplying products alone are not enough to begin effectively tackling the growing burden of unmet needs in society today. Specifically, here in Singapore, the company had partnered with a hospital to help reduce the frequency of readmission for high-risk heart failure patients. Products aside, this also required coming up with new educational materials for the patients, training nurses on new clinical protocols, and even implementing wireless capabilities within their devices to consistently transmit crucial data to the relevant healthcare providers. This formed a holistic telehealth solution that underpinned their new "Hospital to Home" business unit.

This illustration is but a small of example of how the industry is now pivoting towards more holistic solutions, which serve to fundamentally benefit not only patients, but all-encompassing stakeholders as well.

How can advancements in digital technologies help enable this transition into more patient-centric care?

Digital technologies can allow the processing and capturing of information; but data is just data until you actually make sense out of it. Particularly for us in Singapore, it's about how we enable data collection but also work with companies to build up capabilities in data analytics and then translating those insights into actual applications.

We are seeing a strong interest within the industry to invest in digital capabilities.

Merck (MSD), for example, has invested in a global innovation hub here in Singapore, primarily focused on harnessing digital technologies. Of course, the center employs the typical backend IT operations, but what's really impressive is how they've built up capabilities in the field of data analytics, cyber security, UX/UI (user experience / user interface), and understanding patient behavior. These are the new skillsets that may not traditionally exist in a healthcare company, but are areas that we increasingly see as important for the industry.

From our perspective, we want to create the ecosystem to ensure that companies are able to leverage Singapore as a key platform for building up these capabilities.

The good thing is that a lot of these skillsets are not new to the country. We have had a very strong presence in Infocomms and IT sectors—and it is then upon organizations such as EDB to work with stakeholders in these sectors to see how we can translate those competencies into applications within healthcare. That's where some of these partnerships between some of these healthcare and

IT companies come into play.

What would you like to have achieved in the next three to five years as EDB's director of biomedical sciences?

By then, I hope to have seen a lot of progress achieved on the ATC front—attracting new activities to Singapore, creating newly successful businesses out of Singapore, while transforming a lot of the existing base to produce long-term sustainability within the country.

And of course, with the above, I hope that we would have attracted a multitude of new activities to the country in line with our national ambitions, while constantly evaluating how Singapore can continue to be relevant for the industry, to ensure our continued future growth.

In maybe looking a bit further down the line, as Asian enterprises increasingly begin to look outward, we hope to ultimately position Singapore as an enabler of their international expansion objectives.

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