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Thailand is a small market, but with the potential to build up its research and innovation capacities

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Nares Damrongchai and Sirasak Teparkum from the Thailand Center of Excellence for Life Sciences (TCELS) lay out current challenges in the Thai healthcare and life sciences industry, their mains axes of research as well as how TCELS is helping the development of Thai startups and expanding international collaboration.

Could you please introduce yourselves to our international readers?

Nares Damrongchai (ND): I am the CEO of the Thailand Center of Excellence for Life Science. I am trained as a bio-engineer and arrived at TCELS almost seven years ago. At that time, it had just started to become a public organization. So, I became the first CEO and took on our mission of jump-starting and fostering the life science industry of Thailand based on research. In the process, we work with partners and investors from overseas, including large multinationals, mid-sized biotech companies, mid-sized pharma companies, startups and all the universities in Thailand and the world.

Sirasak Teparkum (ST): I am the deputy CEO of TCELS. I joined TCELS three years ago. My background is in plant molecular biology. At the beginning of my career, I worked at the National Biotechnology Center (BIOTEC) and transferred to the National Nanotechnology Center (NANOTEC) which is under the umbrella of the National Science and Technology Development Agency (NSTDA).

At NANOTEC, my position was a Deputy Director, responsible for the business development unit, which aims to apply nanotechnology to industries including food, textiles, medicines, cosmetics, and petrochemicals.

So, it was a very broad area that wanted to use nanotechnology to improve surface and structure properties, for example, water repellency or anti-microbial properties. When I moved to TCELS it was the other way around since we focus on the life sciences industry and try to use all kinds of technology to respond to this industry, for example, nanomedicine, cell and gene therapy, medical robotics, high throughput screening for drug discovery, biopharmaceutical manufacturing and clinical research. I had to learn a lot about the value chain of the life sciences industry. Right now, I'm responsible for various life science innovation fields, for example, bio-pharma and regenerative medicines, including genomics and precision medicine, medical devices and medical robotics; and cosmetics and food supplements.

TCELS, along with the Thailand Board of Investment, attended the annual BIO International Convention in Philadelphia this year, what were the expectations and results from the convention?

ND: TCELS has been participating non-stop in the BIO International Convention since the beginning. We are expanding, and we want to bring the best of our companies and people, startups, universities, together. The number one mission is to make Thailand known to the biotech world, to investors, and to create partnerships with universities and companies.

This year in 2019, our pavilion had the biggest and best delegates (64 people from Thailand were there), all kept busy with the conference, startup pitches, and partnering systems. We are still following up with all the matching deals, but I estimate the value to be close to 900 million baht (USD 29.3 million).

TCELS was created by the government of Thailand in 2004, to provide the central link between innovation and investment, facilitating domestic and international partnerships in the life sciences. What have been the main milestones and achievements so far?

ND: Since the beginning of TCELS, we have funded human genome research. The key milestone came recently when the results of that research together with results from our partners, mainly the

Department of Medical Science and universities were successful in introducing genetic testing formally into the reimbursement system for a number of certain diseases.

For example, if the doctor were going to prescribe drugs for HIV, or seizures, they would recommend genetic testing to find the particular markers that help patients to respond to those drugs and prevent adverse drug reactions. Now those could be reimbursable, up to 2,000 baht (USD 65) per test. So that is big progress for us because it means that anyone could have access to this kind of cutting-edge service. And it is based on research that has been done in Thailand.

ST: I consider this a big movement in regard to policy innovation. We can drive some of the research to the national policy for the reimbursement. This is particularly for the adverse drug reaction, the so-called Steven Johnson's Syndrome. This project was an international collaboration to identify the gene of adverse drug reaction and screen the patients before applying the drug, Carbamazepine, to the patients. The project was a collaboration between Thailand and Taiwan, and eventually, both countries got the benefit from this research as well. Thailand and Taiwan were able to drive this research into the national policy and able to save many lives accordingly.

What are the main challenges that TCELS has to face regarding the development of the healthcare and life science industry?

ND: The main challenge is local capacity. Thailand is a small market, but with the potential to build up its research and innovation capacities. At the moment, the flagship of TCELS is biopharmaceuticals. It is too early to tell if it has been successful for us. But there have been some key developments, including the pilot plans which would scale up research from the laboratory into an industrial scale and provide manufacturing capabilities. We have standards and validation of all the methods. Our biopharmaceutical research and manufacturing capability is growing, with the participation of many universities, research organizations, and Thai companies.

Regarding Thailand 4.0, one of the main priorities for the government is to make Thailand a 'Start-up Nation'. Could you tell us more about TCELS' 2019-2021 projects?

ND: To grow local venture companies, we have been running acceleration and mentorship programs, through our international networks. Our international partners include Mass Challenge and Leave-a-Nest, a Japanese accelerator. In Thailand, we collaborate with companies such as PTT and SCG to help grow local life sciences deep tech startups. We have awarded a number of Thai

start-up companies, including an animal health company, medical device companies utilizing brain waves and brain signals, and natural products-based pharmaceutical companies. We are engaging with a company that manufactures cell therapy for cancer. For now, and in the coming years, we will be focusing on medical devices, cell therapy, genomics, and drug discovery.

Thailand does not have big pharma companies yet, but we have a drug discovery alliance working with big Japanese companies, with TCELS acting as the access point between the Thai institutions network and the international network. This is a new Open Innovation platform we are building up. By consolidating the compounds and creating a system that could help to collaborate with partners, without having our partners and having to deal with all these very complicated dealings. Drug discovery from a natural product is so sophisticated you have to deal with a lot of contracts, legal issues, queues, ownership, bio-resources, and protocols. The platform gives a governance structure, define clear relationships among actors, and help to free up researchers to do their job – research.

How can Thailand compete with Taiwan and Hong Kong, for example, in regard to the life science industry?

ND: We partner with these countries. Meanwhile, we also benchmark. I have set up a team to define indicators for life science progress. We are ready to launch it sometime soon. It would be the first time that Thailand has real indicators to measure specifically life sciences. We could measure how much we, as an organization, are progressing as a life science centre. And at the same time, it would measure Thailand’s growth in this sector in terms of research, innovation and market, and to benchmark internationally.

ST: We don’t want to compete with them. We work with everyone. Because now we know that if you try and compete with everyone and stay back in our country, you cannot go anywhere, especially for the life science industry. And in the future, AI and digital health will play important roles in life sciences. Many technologies will be convergent and combine to the emerging technology, for example, pharmacology and genomics will become pharmacogenomics and with the advance AI software, a mobile phone might be able to analyze drug-responsive genes enabling to the precision medicine. So, technology moves very fast, so you cannot work by yourself. You have to collaborate and work with everyone.

How do you plan to foster more international partnerships as well as foreign investment in Thailand?

ND: We have been working on our clinical trials system, helping to create the strategic clinical research roadmap for Thailand. We are progressing in an effort to make Thailand become the centre for regional clinical trials. The roadmap laid out clear plans for improving the local capabilities in doing research and at the same time improving our performance overall when it comes to costs, speed or quality. Our current improvement starts to show its result in regulatory processes, data management system and the ethical committee system.

What drives you both to keep going?

ND: First of all, we have a good team at TCELS. With the help of my executive friends, we built a good team. The team works for almost 24 hours. I drive them, but they also drive me. This kind of work relationship is hard to find elsewhere. TCELS is a very good organization to work with. Apart from our core business, I have been supporting global young professionals. Young, global scientists who come together and try to work to solve the world's problems make a difference. It always energizes me, working with aspiring young professionals. And life sciences is the area that you find most of these people, the young talents. If you want to look at start-up companies, people who have studied new technology, new science, you can find them in life science. So, I am passionate about life sciences.

ST: TCELS is a fascinating organization. We are very small with only around 100 people, but we are responsible for driving Thailand's life sciences industry. The role of TCELS is a facilitator or a conductor to drive life science research to commercialization; so, we have to work with great synergy and internal and external collaboration

I admire the vision of the previous executives that set up the strong fundamentals for TCELS and the life sciences industry in Thailand. It is so challenging, and I would like to see what is going to happen in the next 5-10 years. I would like to see in the next 10 years that AI will be able to drive the digital healthcare system of Thailand into the new medical services.

What will we see with TCELS in five years when we return?

ND: Thailand is changing right now. Looking at the trends, we see that Thailand needs an organization like TCELS as a strong driver or deliverer of value to society. I often feel that TCELS is at the crossroads between research, innovation, public health and finance systems. Each system has different goals and expectations. In five years, I hope that TCELS would be able to make the most out of the four different systems and bring more life sciences innovation into the market, making an impact on people's lives in a tangible way.

ST: We work with universities very well, because one of the advantages of being a small organization is that we have to find partners. In the next ten years, the life science industry in Thailand will get stronger in many aspects. And we will try to close the gap to synchronize with all partners, and to drive them onto the same direction.

Do you have any final message?

ND: Thailand is growing in many dimensions, in terms of economy, society, and knowledge. We are going to become a regional player but not rushing too much. We are building up our people, depending less on the outside, but happy to create partnerships internationally. I always look towards the end goal, which is sustainable growth, fair and equitable access and a lively economy.

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