Interview: Fanny Law Fan Chiu-fun â?? Chairperson, HKSTP, Hong Kong

â??I have always said that innovation is a marathon, not a sprintâ?•

21.06.2018

Tags:

Hong Kong, China, Greater Bay Area, HKSTP, Biotech, Innovation, Investment

The Hon. Fanny Law Fan Chiu-fun, chairperson, and Prof. Daniel Lee, head of the Biomedical Technology Cluster, at Hong Kong Science and Technology Parks Corporation (HKSTP) provide an update on Hong Kongâ??s biotech scene, government commitment to innovation, and Hong Kongâ??s role within the wider Greater Bay Area project.

We had the pleasure to interview both of you in June 2017. Now, nearly a year later, what have been some of the biggest changes within the Hong Kong innovation and biotech scene?

I have always said that innovation is a marathon, not a sprint. A year is a very short span of time to expect concrete developments in this space, but nevertheless, the innovation and technology ecosystem â?? and especially so in the biomedical and biotech fields â?? have been significantly enriched over the past year.

Within the Hong Kong Science and Technology Park (HKSTP) itself, we have hosted so many companies and research institutions that are interested in our activities and programs. In fact, we are already at 88 percent occupancy and expect to finish our next phase of development mid-2019. Notably, we also have three unicorns, all having joined HKSTP since 2014. One is in AI, one is in land transport, and the last one is Cirina, whose founder Professor Dennis Lo you interviewed last year as well. In June 2017, Cirina merged with GRAIL, a spin-out from one of the largest US biotech companies, Illumina. GRAIL now has both a laboratory and office set up in Hong Kong.

Just a few weeks ago, the Chinese Central government also announced that Hong Kong has been designated Chinaâ??s international innovation and technology center. This is only the third in the country, after Beijing and Shanghai, and the only one with the â??internationalâ?? label. Hong Kong

universities and research institutions are now eligible to apply for Chinese government funding and grants directly. Previously, we had to partner with mainland Chinese institutions or establish satellite campuses in mainland China to do so. This is a huge step that came from President Xi Jinping himself, after 24 Chinese Academy of Sciences Fellows in Hong Kong wrote him a joint petition. President Xi responded personally in a response that said China needs to value the strong research ability in Hong Kong and the role Hong Kong can play in fulfilling Chinaâ??s mission to become a global innovation center. Following this directive, each of the 22 laboratories in Hong Kong (16 State Key Labs and six branches of the Chinese National Engineering Research Center) instantly received RMB 1 million in funding.

More importantly, Hong Kong institutions are now able to apply directly to nationally strategic projects as outlined by the Chinese Ministry of Science and Technology. Based on each strategic Five-Year Plan, the Ministry invites project applications related to a number of areas that have been designated national priorities. These are often mega projects of massive scale and national importance that would not have been granted to Hong Kong institutions alone before. We are now able to apply directly for the full funding, to come to Hong Kong, which also means we can bring international institutions in as partners as well. This is huge because Chinaâ??s research funding is several orders of magnitude larger than Hong Kongâ??s! Currently, only 0.75 percent of our GDP is spent on R&D, although our current Chief Executive has said she will double this percentage in five years.

President Xiâ??s directive is testament to Hong Kongâ??s strength in research. Looking at Hong Kongâ??s competitiveness in academic research, we now have five universities ranked among the top 100 in the world, up from four last year, making us the city with the most top-100 universities in the world. We also have a multitude of fellows from the Chinese Academy of Sciences and Chinese Academy of Engineering. As an indication, the New England Journal of Medicine, the leading medical journal globally, publishes around 5000 articles each year, and the editors select the top ten most notable articles each year. Two of the ten in 2017 were from Hong Kong: Professor Dennis Lo, an expert in neonatal diagnostics, and Professor T. S. Mok, an expert in lung cancer.

Another very exciting news is Hong Kong Stock Exchangeâ??s decision to launch a new biotech chapter allowing pre-revenue biotech companies to list if they meet a number of other criteria, including expected market valuation of USD 200 million and Phase I clinical trials approval by a leading regulatory body like the US FDA or Chinese FDA.

Finally, HKSTP itself has been named by the Hong Kong Ministry of Science and Technology as a National Incubator because of the comprehensiveness and quality of the services we offer.

Figure 1: HKSTP as a startup accelerator providing a wide range of support services

As an extremely wealthy economy, Hong Kong does not really face a question of resources when it comes to investing in the development of strategic sectors, but there seems to have been a historical reluctance by government administrations to be seen as favoring one sector over another. Has this attitude changed recently now that it seems innovation and particularly innovation in life sciences has become a strategic priority?

We value our label as the freest economy in the world and we are very liberal. But I think recent governments have understood that being a free economy does not mean treating all industries and companies the same. In such a competitive global environment, the government cannot be completely laisser-faire in its approach. This is why, for instance, the previous administration established the Innovation and Technology Bureau (ITB) [Hong Kong equivalent of a Ministry]. We will have top-down priorities while maintaining the utmost freedom for bottom-up initiatives. After all, Hong Kong has always been an international financial center and our favorable tax incentive regimes for financial activity have contributed to the growth of this sector. Now we are applying the same concept to selected high-tech, innovative sectors.

[Featured_in]

This is why in our current Chief Executive Mrs. Carrie Lamâ??s maiden policy address, she listed eight initiatives to boost Hong Kongâ??s innovation and technology landscape. I mentioned she wanted to double our R&D spending from 0.75 percent of GDP to 1.5 percent over five years. Note that Hong Kongâ??s economy is growing significantly (3.7 percent in 2017 and 4.7 percent in Q1 2018) so in absolute terms, this is a lot of additional money.

Our Budget this year provided HKD 50 billion for innovation and technology alone, the biggest one-off spending in this area. HKD 20 billion is earmarked for the construction of Phase I of the Lok Ma Chau Loop, the Hong Kong-Shenzhen Innovation and Technology Park. HKD 10 billion will go into the Innovation and Technology Fund, administered by the ITB, which has already allocated HKD 20 billion to both institutions and companies over the years. HKD 10 billion will go into the launch of two tech clusters on healthcare, and AI and robotics, respectively, to attract non-profit making institutions to develop these two technology platforms in Hong Kong. Finally, HKD 10 billion will be invested in HKSTP to enhance our facilities and support various programs.

However, we do not just want to spend money for spending moneyâ??s sake. We also need to have a clear strategy in mind with tangible outcomes and deliverables. We would also like to encourage the private sector to do more. For instance, we have offered additional tax deduction incentives, 300 percent for the first HKD 2 million and 200 percent for the remainder, without any cap, unlike many other countries that impose a cap.

Coming to Hong Kong Science and Technology Park more specifically, could you share a bit more on your strategy and key deliverables, then?

We have set clear KPIs. The HKSTP officially includes the Science Park, focusing on R&D; our InnoCentre, focusing on brand design and marketing; and industrial estates, offering manufacturing capabilities.

We want to nurture five unicorns by 2020. As mentioned, we already have three, so we want to see two more in the next two years. We also want to have a certain number of companies with revenues over HKD 100 million, a number of anchor companies, and so on. Our incubation programs have been extremely successful. 542 companies have graduated since inception, 409 are still in business and four have been publicly listed in HK! In FY 17/18, we raised HKD 1.2 billion in direct engagement. Hong Kong was ranked as the 5th fastest growing start-up ecosystem in the world so we have a very important role to play in support of this.

From my perspective, I want to bring job creation, new technologies, and real, lasting social and economic benefit to Hong Kong. For instance, with our academic collaborations, I wish to recruit professors from world-class institutions to spend a significant amount of time in Hong Kong supervising and teaching, not just the name of the institutions. This is the only way to take Hong Kongâ??s innovation and start-up environment to the next level.

In your previous interview, you mentioned that Hong Kong is a latecomer to biomedical and biotech areas, and you encouraged the private sector to play its part to build up this industry here. Can Hong Kong attract investments from established MNCs or does Hong Kong need its healthcare or biotech HSBC, so to speak, to champion this sector â?? and is that possible to build?

[related_story]

We recognize that the industry is mature globally. Big Pharma companies already concentrate their activities in a few R&D hubs, so we are not asking them to relocate. In any case, we have limited space and facilities in Hong Kong. We need to be very targeted and strategic â?? to focus on

technologies that are also new for the global industry and to look for applications unique to this region, so that there are competitive advantages to being based here.

An obvious contender is stem cell and regenerative medicine. This is a booming field. There are three CAR-T therapies on the market and twenty more are on their way. Looking at Big Pharma, Novartis only has one center in Boston, having failed to establish one in Shanghai. Roche has nothing. Roche is a very interesting example, actually, because global CEO Dr. Severin Schwan actually came to Hong Kong last year, and our Chief Executive Carrie Lam visited Roche HQ on her trip to Switzerland last year as well. Roche has had a sales and marketing affiliate here for a long time, and are now collaborating on a few research projects with local universities. There is this relationship built up between Roche and Hong Kong, so we hope to be able to make a good case that Hong Kong could be a great location for a new R&D center in stem cell and regenerative medicine. Of course, they have their strategic alliance with Chugai in Japan but Chugai does not do cell therapy, and a Japanese R&D center will focus on the Japanese market, which, while huge, is not as big as China in terms of population â?? and after all, population is what will drive the eventual market size of precision medicine!

This is why Hong Kongâ??s ambition is to establish the highest international standards for cell therapies and genomic medicine. We are in the process of establishing a number of facilities that will be meet the standards required by international regulatory bodies, like a cell treatment facility, a gene therapy quality assurance center, biobanks for tissues and cells, and genetics, epigenetics and behavioral databases, all in collaboration with various academic and research institutions, as well as industry. By this time next year, I am confident that some of the largest biobanks in the world will have a presence in Hong Kong.

Why did Novartis fail to establish the CAR-T center in Shanghai, given that both Novartis and the Chinese government were extremely interested? There were logistics, quality and operational issues to consider. For instance, Novartis wanted to keep the cell processing laboratory work in Boston, which would have meant the sending of blood samples back and forth across the Pacific Ocean! But if Hong Kong is able to do it according to international standards, this will be a win-win situation for all. We already have the first case in Asia of using genomic editing for patient treatment. Such standards do not even exist in the rest of Southeast Asia yet.

We have been supporting the Hong Kong regulators in their strive to be a leader in Asia, by facilitating forums, conferences and even training plans on regulations for advanced therapies that may benefit both the service providers and the regulators. This is another way for us to contribute to the growth of this ecosystem.

With the Greater Bay Area initiative taking shape, Hong Kong will now form an integral part of this mega-city of 66 million people, joining nine cities and two Specially Administration Regions (SARs). What will be Hong Kongâ??s positioning within this giant area? Does Hong Kong run the risk of being swallowed up?

The Greater Bay Area initiative was announced January 2017, the framework agreement signed July 2017 and we expect a fuller document to be published sometime later this year, which will clarify more details. But for Hong Kong, we welcome this initiative and the huge market it represents with open arms!

When Chinese Premier Deng Xiaoping gave Hong Kong the â??One Country, Two Systemsâ?? opportunity for 50 years, his intention was not to swallow Hong Kong into China but for Hong Kong to help China open up. This is also President Xiâ??s intention. I recommend that stakeholders read the World Bank report published in conjunction with the Development Research Center of the State

Council in China, â??China 2030: Building a modern, harmonious and creative societyâ??, which was published before President Xi took office and has become his blueprint for the country. His vision is for the Greater Bay Area to become truly open, like Hong Kong and Macau are.

Already, Guangzhou and Shenzhen are two of the most open cities in China but the cities are so far more focused on their own priorities. Once the Greater Bay Area planning document is published later this year, I expect to see the creation of a very senior-level coordinating committee to facilitate the development of this region along the lines of positive collaboration, healthy competition and complementary growth.

For Hong Kong, we are concerned with setting the bar at the highest international standards. If this motivates other cities to work towards those standards, that would be fantastic. In any case, the Chinese market is so big. There is space for many actors. For instance, we have strengths in musculoskeletal degenerative diseases and cardiology, Guangzhou has expertise in respiratory conditions, and so on. There are a multitude of ways Hong Kong and the rest of the Greater Bay Area can support each other across many sectors and platforms. There needs to be more dialogue and active collaboration on this front in the future.

Science is global. People want to work with smart people without any constraints or surveillance. There are huge advantages under this One Country, Two Systems paradigm â?? and the Greater Bay Area essentially combines the finance capabilities of New York, the research and innovation of San Francisco, and the manufacturing capabilities of Texas, within one-hour of commute.

A final message?

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Hong Kong has a very clear and focused strategy. We aspire to achieve three goals.

Firstly, to be the leading biomedical research base in the Greater Bay Area. Southern China does not really have strong educational or research facilities, and in particular, it lacks a world-class medical school. Hong Kong has particular strengths in molecular diagnosis, regenerative medicine, infectious diseases, Traditional Chinese Medicine, and neuroscience.

We can bring value here in three ways:

- An innovation center for preventive care, advanced therapeutics and medical device
- A translation center of choice for overseas pharma companies to enter the mainland market and for Chinese pharma companies to go global
- A gateway to access Chinese healthcare databases

Secondly, to be an AI solution hub. We recognize that mainland China is much stronger in AI because they have been working on it for many years and they also have the scale for it. But AI is a platform technology that cuts across many industries, so we can be the solution hub to support Chinaâ??s AI plan, and even lead in areas like fintech, e-commerce and bioinformatics. HKSTP has already been designated the pilot area and a living laboratory within Hong Kong for the development of â??smart cityâ?? technologies. This can also leverage on our recently signed Free Trade Agreement (FTA) with the Association of Southeast Asian Nations (ASEAN).

Finally, we want to be a start-up accelerator. We recognized that we cannot house all start-ups, but we want to help them take their idea, not from 0 to 100, but 100 to 1000!

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