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"The main challenge for the introduction of traditional Chinese medicine into western society is regulatory."

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Professor Justin Wu, chief operating officer of the Chinese University of Hong Kong (CUHK) Medical Center, shares his professional background and interest in gastroenterology, his insights into the research and commercialization environment in Hong Kong, and his hope for government, industry and academia to work together to propel Hong Kong into global biotech leadership!

Could you start by introducing yourself to our international readers and why you chose gastroenterology as your therapeutic area of choice?

I am a gastroenterologist by training, specializing in this field back in the mid-1990s. My main area of focus is in functional gastrointestinal disorder, each with various digestive symptoms but no effective remedy, making their diagnosis a challenge for doctors and bringing increased psychological distress and social burden for patients. One in five people in Hong Kong suffers from these kinds of conditions, with the most notorious being Irritable Bowel Syndrome (IBS). I have been working as an academic focusing in this niche as well as serving in several international professional organizations in my respective field.

I was also the Associate Dean of the Faculty of Medicine at CUHK, specifically as the director of the medical school's flagship undergraduate program looking at the developments of physician leaders. This program has been rated top among all university undergraduate programs for the past five years, recruiting the most talented minds of the city. This program also develops their leadership skills and focuses on medical areas outside of the core program.

Furthermore, I have the pleasure of being an independent non-executive director of a local biotech company called APTORUM that looks into medical innovations in the field of infectious diseases, digestive diseases, and medical robotics. The company, with a focus on research in Hong Kong, helps to facilitate the translation of upstream medical research to commercialization. Therefore, and with my previous collaboration with other pharmaceutical companies, I have always strived to foster the development of the biomedical and biotech sectors in Hong Kong, which I hope will become a big wave in the future.

What are the main trends in Hong Kong in terms of gastroenterology?

Hong Kong is special compared to the rest of Asia because we are now starting to witness interesting trends that erupted in Western countries over 30 years ago. An example of this is inflammatory bowel disease (IBD), which although on the rise more generally in Asia, Hong Kong is now the leading country in terms of disease incidence. Over the past 25 years, there has been a 700 per cent increase in disease prevalence, with many fearing that more Westernized diets and changes in hygiene and lifestyles as key factors.

Furthermore, in Hong Kong, we are seeing an increase in obesity, which, along with urbanization, are resulting in an increase in colon cancer also. This is why CUHK is leading multiple multinational research projects to look at the epidemiology of these two diseases and their strong links to lifestyle changes within the country.

We see that Hong Kong has experience in translational research but struggles to bring research to commercialization. What is your assessment of this and what are the next steps to improve this situation?

Commercialization of academic research is a very complicated issue. Looking at medical schools and universities in the US, they are extremely enterprise-orientated and eager to transform their research into something quantifiable and available on the market. This is largely due to these schools being privately funded, where a strong incentive to commercialize follows suit. However, for countries like Canada, UK, Australia and evidently Hong Kong, there is less of an incentive because the technology and knowledge transfer stem from public funding and we see few or no key performance indicators to measure or incentivize commercialization.

For academics working in research institutes, their KPIs are mainly in terms of publications, grants and good teaching performance. This does not provide them with incentives to commercialize their work. Researchers, therefore, focus on academic publications, which takes up less time compared to the IP and patent applications related to commercialization.

Looking at the relevant data, we can see that researchers in Hong Kong have a high level of academic impact when looking at individual publications, despite the relatively low percentage of GDP spent on research. This is a great achievement for Hong Kong researchers and academics but means that researchers tend to focus on relatively risk-free academic research interests rather than trying to commercialize their product or establish a company.

How would you asses the collaborative landscape between academia and the key stakeholders in the industry?

Looking at collaboration, we are still in the infancy stage, because in Hong Kong we lack the much-needed legal experts specializing in the protection of intellectual property; most of these specialists are located in the US or the UK.

For my of my colleagues and academics, who have a rare but strong interest in commercializing, they find that even their universities or the government entities lack the experts needed to progress with their idea. This comes down to culture and tradition, with institutes preferring that academics focusing on publications and academic research, leading to a lack of support when it comes to the development of business strategies and plans. In this regard, we face a lot of challenges moving forward to break away from this stereotype in the industry.

Moreover, although the pharmaceutical and healthcare sector has a close proximity to the Hong Kong Stock Exchange (HKEx), most domestic investors still prefer to invest in traditional, low-risk, high-yield sectors like real estate, with very few dabbling in biotechnology. As a result, academics find it hard to attract investors.

Looking at the Greater Bay Area Initiative’s expansion to include Hong Kong, what are the opportunities and challenges that you see?

It is evident that the government has shown its determination to build a strong biotechnology base in the area, partly with the help of the President’s explicate indication that Hong Kong must become an international technology and innovation hub. Thus, this earmarked the development of a science park in the area to achieve this specific purpose, which has undergone an investment of HKD 50 million to attract overseas investors and institutions to collaborate with academics in Hong Kong.

Although changes are apparent, there are still many challenges to overcome when envisioning Hong Kong as a biotechnology hub, and in order to change the culture and build the expertise through creating mature regulations and policies, this will take time. Currently, regulations are too

stringent to accommodate flexibility for foreign investors, so the government needs to streamline processes in place to allow further collaboration for local academics with overseas investors.

What role do you see for Hong Kong to play in terms of linking traditional Chinese medicine (TCM) and Western medicine?

As a founding director of the Hong Kong Institute of Integrative Medicine at CUHK, I can strongly say that Hong Kong's geographical position and history is a huge asset in this regard. The institute offers a platform for both healthcare practitioners and academic researchers to work together on developing treatment protocols for diseases that combine best practices from both Western and traditional Chinese medicine.

The Institute is also promoting the modernization of traditional Chinese medicine through the extraction of active compounds in herbal medicines that may be of pharmaceutical value. So far, we have collaborated quite well with industry, with many of those using our platform possessing over 30 years of experience in translational research.

The main challenge for the introduction of traditional Chinese medicine into western society is regulatory. If we were to push Chinese herbs through clinical trials, there would be a lot of requirements and regulations adopted from the FDA, whose policies are based on western developments in the industry. Local products are often based on a number of herbs and natural compounds rather than a single one, for instance, so it would be almost impossible to complete a clinical trial according to FDA regulations.

This is why the clinical requirements for Chinese medicinal research are strict, due to the need to have extensive efficacy and clinical safety data. It is for this reason as well that Hong Kong lags behind Singapore, Canada, and mainland China when it comes to new drug development, despite our strengths in medical research.

How are academia and industry advocating for regulatory reform in this regard?

Although the industry has been lobbying with policymakers as well as government officials, a change on this scale needs strong endorsement and commitment from the highest government levels. Nevertheless, Chief Executive Carrie Lam's acknowledgement of the modernization of Chinese medicine as one of the top priorities for healthcare is welcome. With her determination, more front-line government officials will be more favourable to make special arrangements to foster translational research in this therapeutic area, but there are still a lot of challenges ahead.

Here at the University, we have been working with the Hong Kong Baptist University for almost 15 years on a herbal formula for IBS. We now have a lot of clinical research and animal data and have conducting pre-clinical studies. Moreover, we are also the first group to liaise with regulators to acquire a clinical trial license from the Chinese FDA and we are soon to obtain a license from the Hong Kong Department of Health to conduct herbal clinical trials for IBS in men. Breaking these barriers has been tough, but the future is bright, and I hope we have paved the way for others to follow and gain the required licenses to conduct clinical trials using traditional herbal medicines.

Finally, what do you see as the main role that Hong Kong can play in the biotechnology sector in the future?

Looking at the QS World University Rankings, there are two medical schools in Hong Kong that are internationally renowned among the top 50s, which account for 2 out of 5 top medical schools in Asia, proving that Hong Kong has a strong reputation and robust research capabilities that can ultimately drive medical innovation in biotechnology. We also remain an attractive country for young scientists to remain after their medical studies, showing we have the ability to retain top talent.

Furthermore, as previously mentioned, we have a good relationship with the Hong Kong Stock Exchange, so in the near future, investors can have good access to great ideas from the Hong Kong start-up ecosystem. Moreover, new medical innovations and ideas will have easy access to fundraising platforms as investors gradually feel more comfortable investing in biotech, and in particular, more upstream drug candidates.

We have the determination to facilitate this change, so I believe we can really make a difference in Hong Kong. I hope Hong Kong can surpass our main competitors such as Singapore, and even Shanghai, in due course!

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