

HEALTHCARE & LIFE SCIENCES REVIEW

PHARMA
BOARDROOM

PUBLISHED IN COLLABORATION WITH:



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SUPERCONNECTOR
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DAWN OF A NEW ERA *page 19*

HONG KONG

SEPTEMBER 2017



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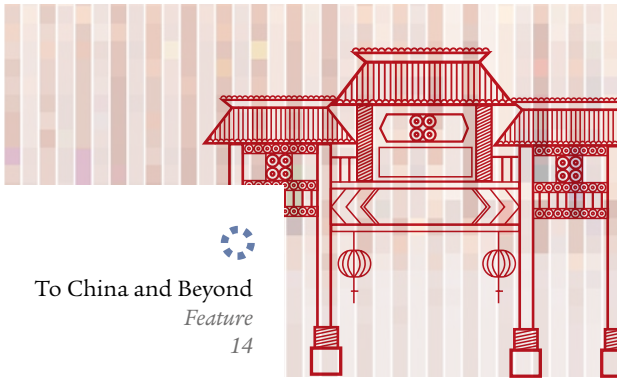
Andy Barnett, general manager, Roche

Dorine Leung, general manager, Novartis

As well as the companies we have met for their support, assistance and enthusiasm.

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Hong Kong

Additional full-feature interviews from our Hong Kong 2017 Report can be accessed on PharmaBoardroom, the premier website for C-Level executives, consultants and state actors in the pharmaceuticals and life sciences sector, alongside hundreds of exclusive interviews featuring the main movers and shakers of the industry, free country reports and sector insights supplemented by the latest news from global markets.

AMPLIFIED CONTENT



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IN BRIEF



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This **#Hospital Operator** thinks its a **#biotech #hongkong**

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Hong Kong: Land of the Biotech Unicorns **#hongkong #biotech #unicorn #startups**

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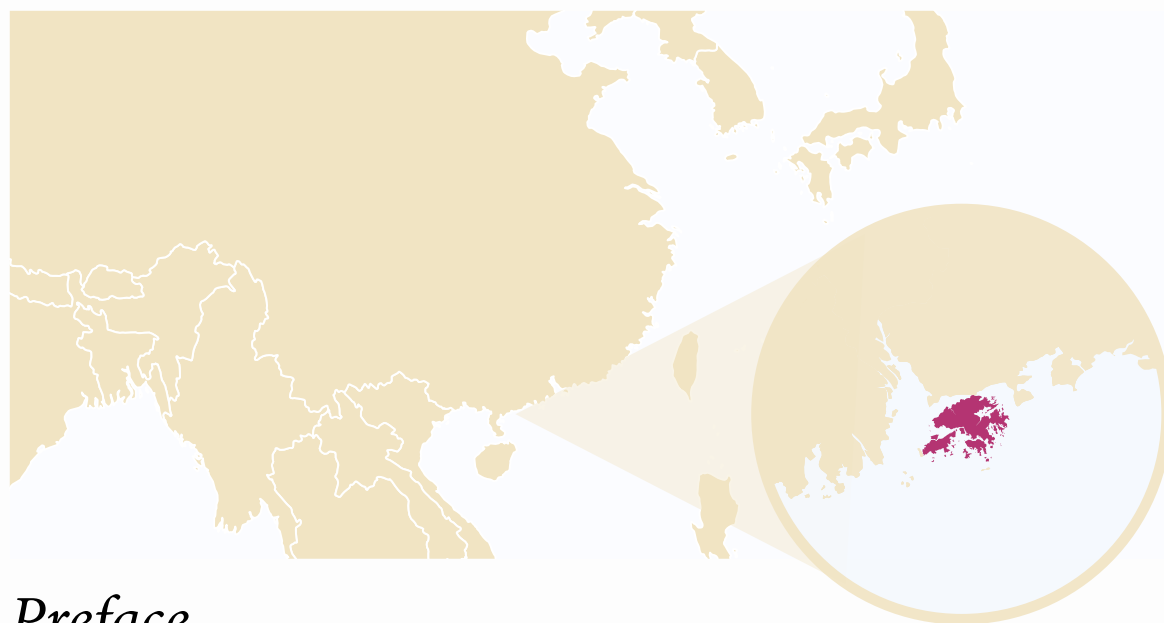
Christopher Cheng of the **#HongKong Institute of Biotechnology (#HKIB)** on confluence between **#biotech** and **#TCM**

[Read the interview](#)

@pharmaboardroom

Andy Barnett of **#Roche #HongKong** on the potential in **#digitalhealth** and academic-industry collaboration in HK

[Read the interview](#)



Preface

On July 1 2017, the fifth Chief Executive (CE) of the Hong Kong Special Administrative Region (SAR), The Honorable Carrie Lam, was sworn in at the convention center overlooking Victoria Harbor, witnessed by none other than the Chinese Premier Xi Jinping himself. It was a landmark day where Hong Kong not only witnessed its first female CE but also the 20th anniversary of Hong Kong's 1997 handover to China. "Together. Progress. Opportunity" was the rousing slogan for the 20th anniversary celebration and both President Xi and CE Lam struck an upbeat note at the ceremony.

While Hong Kong has enjoyed a significant period of peace and prosperity since the end of colonial rule, ranking as one of the richest cities in the world with an average GDP per capita of USD 43,681, challenges do loom in the future, from uncertainty over the trajectory of mainland-Hong Kong relations (most explosively manifested in the 2011-2 Occupy Central movement) to more prosaic concerns like a rapidly aging population exerting increasing financial strain on the healthcare budget, as well as the constant struggle of maintaining a sharp competitive edge amidst intense regional competition. It is clear that

Hong Kong – indeed, any country – cannot rest on its laurels but must persist in striving for a better future.

One opportunity is the much-touted Great Pearl River delta initiative launched by the Chinese government, including the nine cities in the Pearl River Delta region of Guangdong Province as well as the two SARs, China and Macau. President Xi witnessed the signing of a Framework Agreement for the development of this so-called 'Greater Bay Area' scheme during the same visit. A region known for its pioneering role in China's Open Door Policy, the huge economic success witnessed over the past decades is an encouraging sign of the benefits of increasing China's linkages with the international community. As the first truly global 'Chinese' city, Hong Kong inevitably has a central role to play within this initiative and should seize advantage of its unique harmony of international and Chinese norms.

Nowhere is this more evident than in the life sciences sector, a nationally strategic industry that showcases both the strengths that Hong Kong must leverage and the weaknesses that Hong Kong must ameliorate. ❄️



As Chairman of Hong Kong Biotechnology Organization (HKBIO), it is my pleasure to introduce the Hong Kong edition of Healthcare & Life Sciences Review.

The biotech industry in Hong Kong and China are booming, with priorities to foster leadership and partnering networks as well as knowledge, and be seen as a worldwide platform for the development of leading-edge products and services in all fields related to biotechnology. In proximity to China, Hong Kong is suitably located as a regional headquarters for overseas companies looking to capitalize on the growth of the region. Meanwhile, companies from China use it as a bridge to connect with the West.

Recognized for its scientific excellence, Hong Kong universities produce more than 200 biomedical publications every year and are actively involved in large-scale genomics research and studies of emerging infectious diseases. Hong Kong stands as an international player bringing together domestic and foreign life science innovators to improve the quality of healthcare for the people in Asia and the rest of the world. Effectively, Hong Kong creates an ecosystem that builds upon its strengths to foster yet more innovation.

The following report, with its comprehensive study, invites industry stakeholders to understand the challenges and opportunities that our sector is facing right now and in the years to come. With this Healthcare & Life Science Review, I invite all members to learn more about the evolution of the biotech sector in Hong Kong and to learn about this city's immense contribution to the global advancement of life sciences sector.

Albert Cheung – Hoi Yu, PhD, J.P.
Chairman
HKBIO



As Associate Director General of Invest Hong Kong, it is a great privilege to introduce the inaugural Hong Kong edition of Healthcare & Life Sciences Review.

Traditionally recognized as one of the leading international financial centers, as the global economic landscape evolves, Hong Kong is in a sweet spot to position herself as a leading life sciences and healthcare innovation and technology hub.

Ranked as the world's most competitive country in 2017 by the IMD World Competitiveness Center, Hong Kong has a proven track record as a first-class investment destination. Hong Kong boasts a highly sophisticated and efficient healthcare system; world-class academic expertise; globally recognized universities and research institutes; international financial, legal and IP standards; as well as one of the world's largest markets – mainland China – in its backyard.

Not only has Hong Kong historically been the preferred entry point into mainland China thanks to the unique convergence of east and west culture, today, mainland China is looking to Hong Kong as a bridge to the international community, with Hong Kong playing a pivotal role in the Greater Bay Area initiative as well as China's ambitious 'One Belt, One Road' national strategy.


On a local level, despite the modest market size, the efficiency and quality of the healthcare system has led to a vibrant ecosystem with most of the world's top pharma and medtech companies represented here. Furthermore, Hong Kong also possesses a thriving domestic pharma manufacturing with established track records seeking strategic partnerships, as well as a nascent indigenous biotech industry collaborating with leading academics to push the boundaries of medical science.

At this exciting juncture in Hong Kong's development, I am excited that Healthcare and Life Sciences Review Hong Kong 2017 will offer the international community the opportunity to discover and appreciate the full potential and vitality of the Hong Kong life sciences and healthcare industry. I look forward to welcoming all interested parties and relevant stakeholders to join Hong Kong on its journey to become a global R&D, innovation and technology hub.

Charles Ng
Associate Director-General
InvestHK



HONG KONG IN FIGURES

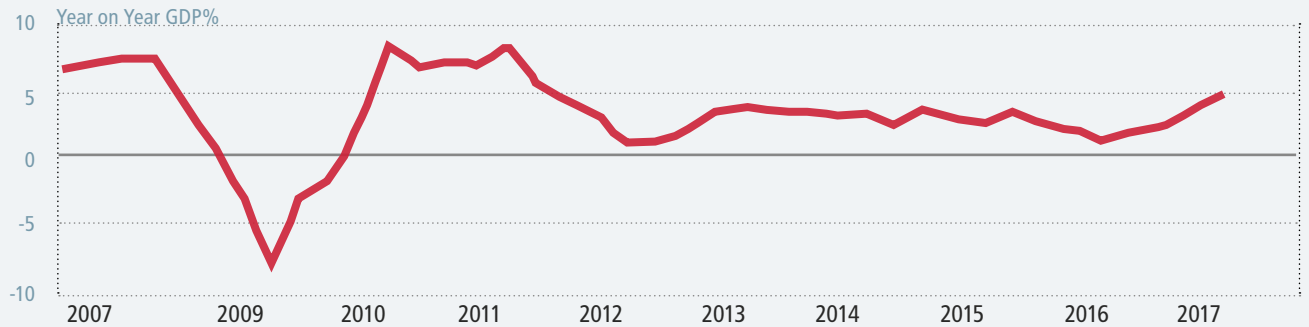
-  **POPULATION:** 7.1 MILLION
POPULATION DENSITY: 6,544 KM²
(4TH IN WORLD)
-  **GDP (PPP):** USD 427.4 BILLION
GDP (PPP) PER CAPITA: USD 58,100
GDP COMPOSITION: AGRICULTURE (0.1%),
INDUSTRY (7.2%),
SERVICES (92.8%)
-  **OFFICIAL LANGUAGES:**
CANTONESE AND ENGLISH

Source: CIA World Factbook (2016)

HONG KONG'S GDP GROWTH











Hong Kong's GDP growth picked up considerable pace at the start of 2017, notching up its best year-on-year performance since 2011.

Source: Financial Times













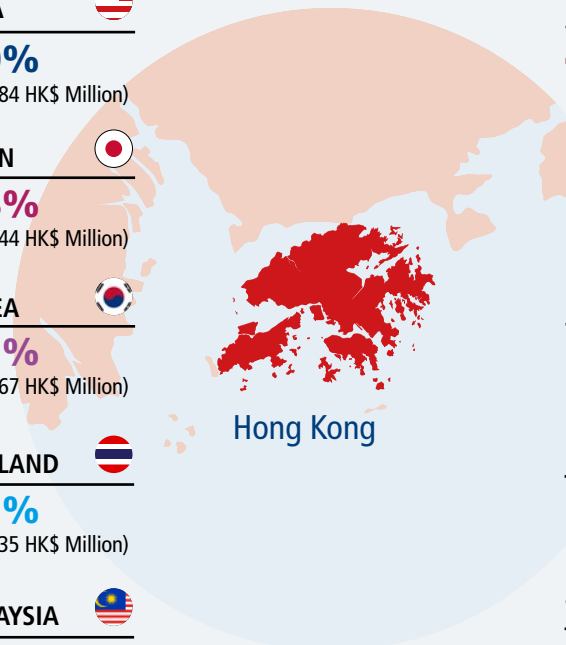
HONG KONG TOP 10 TRADING PARTNERS

TOTAL TRADE

CHINA 	USA 
50.8% (3,860,300 HK\$ Million)	7.0% (530,684 HK\$ Million)
TAIWAN 	JAPAN 
4.8% (366,587 HK\$ Million)	4.8% (363,444 HK\$ Million)
SINGAPORE 	KOREA 
4.3% (322,979 HK\$ Million)	3.3% (250,267 HK\$ Million)
INDIA 	THAILAND 
2.8% (209,474 HK\$ Million)	1.7% (130,535 HK\$ Million)
VIETNAM 	MALAYSIA 
1.7% (126,437 HK\$ Million)	1.6% (117,857 HK\$ Million)

IMPORTS

CHINA 	TAIWAN 
47.8% (1,916,831 HK\$ Million)	7.3% (292,072 HK\$ Million)
SINGAPORE 	JAPAN 
6.5% (261,694 HK\$ Million)	6.2% (246,698 HK\$ Million)
USA 	KOREA 
5.2% (206,645 HK\$ Million)	4.9% (196,228 HK\$ Million)
INDIA 	MALAYSIA 
2.3% (92,773 HK\$ Million)	2.3% (90,584 HK\$ Million)
THAILAND 	PHILIPPINES 
2.1% (82,586 HK\$ Million)	1.5% (59,768 HK\$ Million)

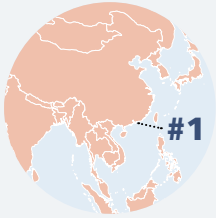


Hong Kong

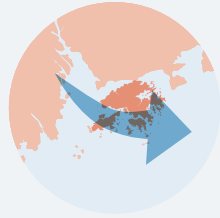
Source: TID Hong Kong



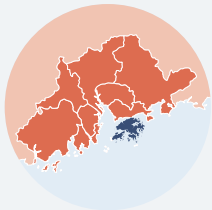
AT A GLANCE



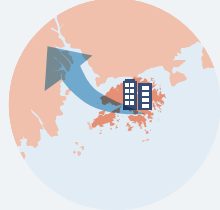
Hong Kong's per capita healthcare spend is among the **highest in Asia**



Almost **1/3** of mainland **China's exports** pass through Hong Kong



Hong Kong is ideally located next to the Pearl River Delta, the **world's biggest manufacturing region**



Closer Economic Partnership Agreement (CEPA) grants **HK-based companies** of any nationality **preferential access** to the Mainland market

SERVICE TRADE PERFORMANCE

	2015	2016	JANUARY-MARCH 2017
EXPORTS	103.7 US\$BILLION -2.4%	98.3 US\$BILLION -5.2%	+3.3% 25.8 US\$BILLION
IMPORTS	+0.1% 73.6 US\$BILLION	+0.6% 74.0 US\$BILLION	+1.8% 18.1 US\$BILLION
TOTAL TRADE	177.3 US\$BILLION -1.4%	172.3 US\$BILLION -3.0%	+3.3% 43.9 US\$BILLION
TRADE BALANCE	30.1 US\$BILLION	24.3 US\$BILLION	7.7 US\$BILLION

Source: Hong Kong Economic Research

PEARL RIVER DELTA (GUANGDONG - HONG KONG - MACAU - GREATER BAY AREA)

TRADE IN THE PEARL RIVER DELTA (PRD)

In 2015:

- Real GDP of the PRD grew by an average of **8.6%**
- The PRD accounted for **54.1%** of Guangdong's population or 4.3% of China's total population
- The PRD accounted for **79.1%** of Guangdong's GDP or **9.1%** of China's GDP
- The PRD accounted for **94.6%** of Guangdong's exports or **26.8%** of China's total export
- The PRD accounted for **72.1%** of Guangdong's retail sales or **7.5%** of China's total retail sales of consumer goods

Source: China Trade Research

THE PEARL RIVER DELTA (PRD) AS A MANUFACTURING BASE

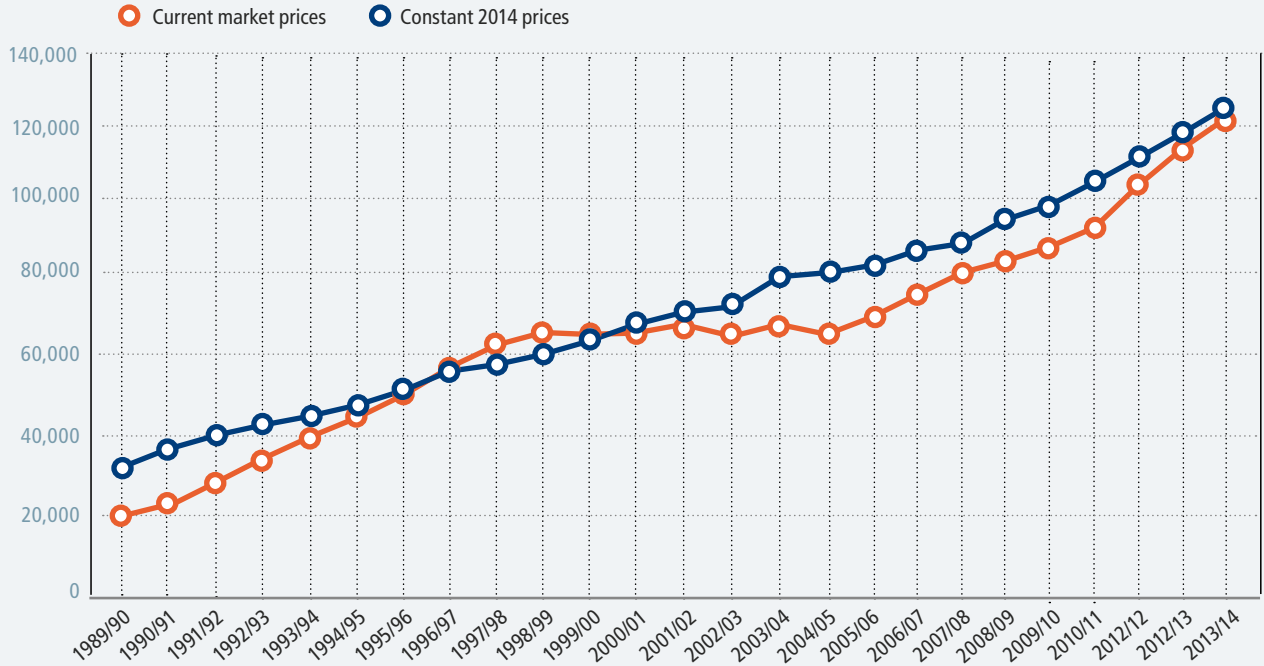
- The PRD started producing labor-intensive consumer goods such as food and beverages, toys and clothes in early 1980s.
- Some categories of the toy industry in the PRD have a world production share in excess of 60%. Other leading products include footwear, lighting fixtures, furniture, etc, to name but a few.
- Foreign enterprises, most of which from Hong Kong, accounted for more than half of Guangdong's total exports in 2015. Shenzhen, Dongguan and Guangzhou, thanks to their proximity to Hong Kong, are the 3 cities in PRD that attracted the most FDI.
- In recent years, when private enterprises are formally allowed and recognised in China, private enterprises mushroomed in the PRD. By the end of 2015, the total number of private enterprises in Guangdong reached 2.48 million, up from 258,620 in 2002.
- From 2000 through 2015, exports by Guangdong's private enterprises skyrocketed from USD 4.1 billion to USD 218.2 billion.



TOTAL HEALTH EXPENDITURE AT CURRENT MARKET AND CONSTANT PRICES

IN HKD MILLION

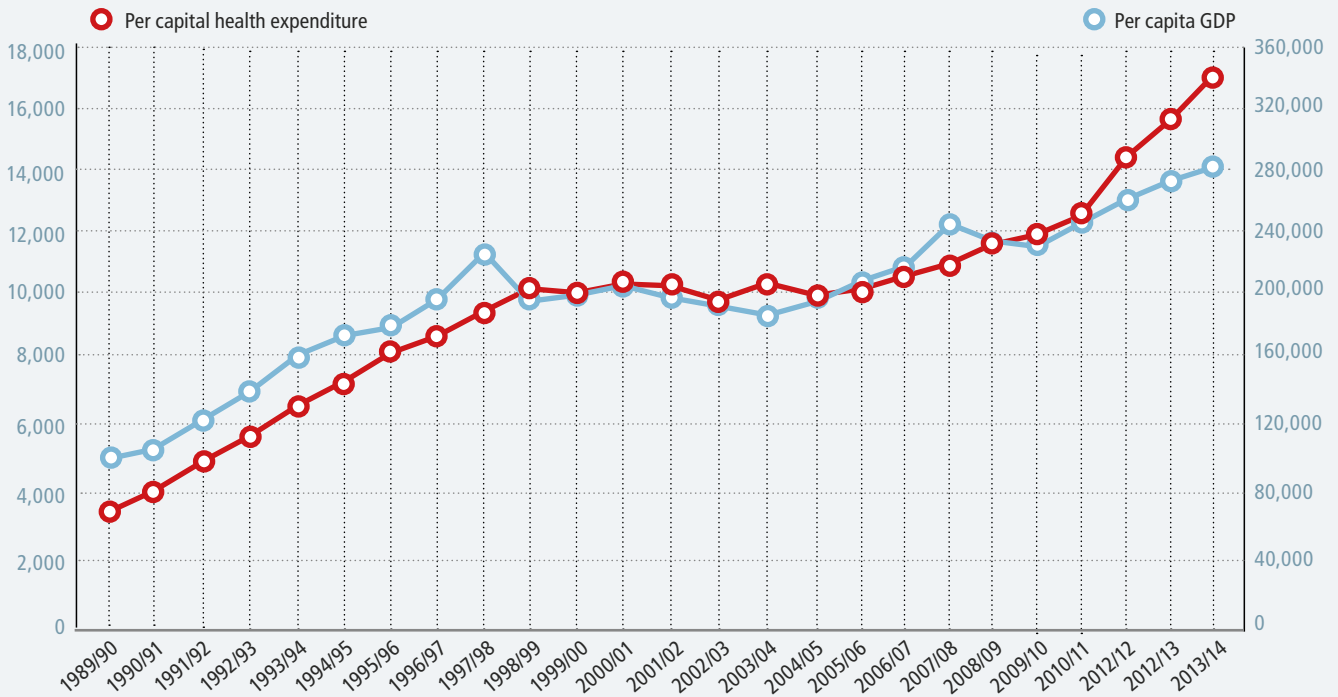
Source: FHB Hong Kong



PER CAPITA HEALTH EXPENDITURE AT CURRENT MARKET AND GDP

AT CURRENT MARKET PRICES (IN HKD)

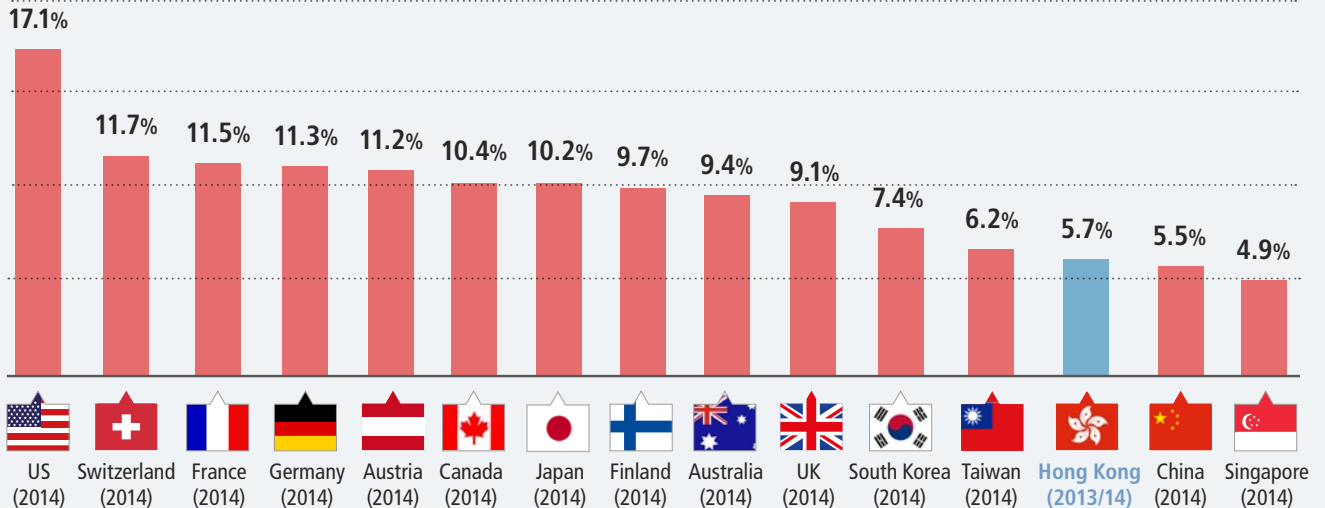
Source: FHB Hong Kong



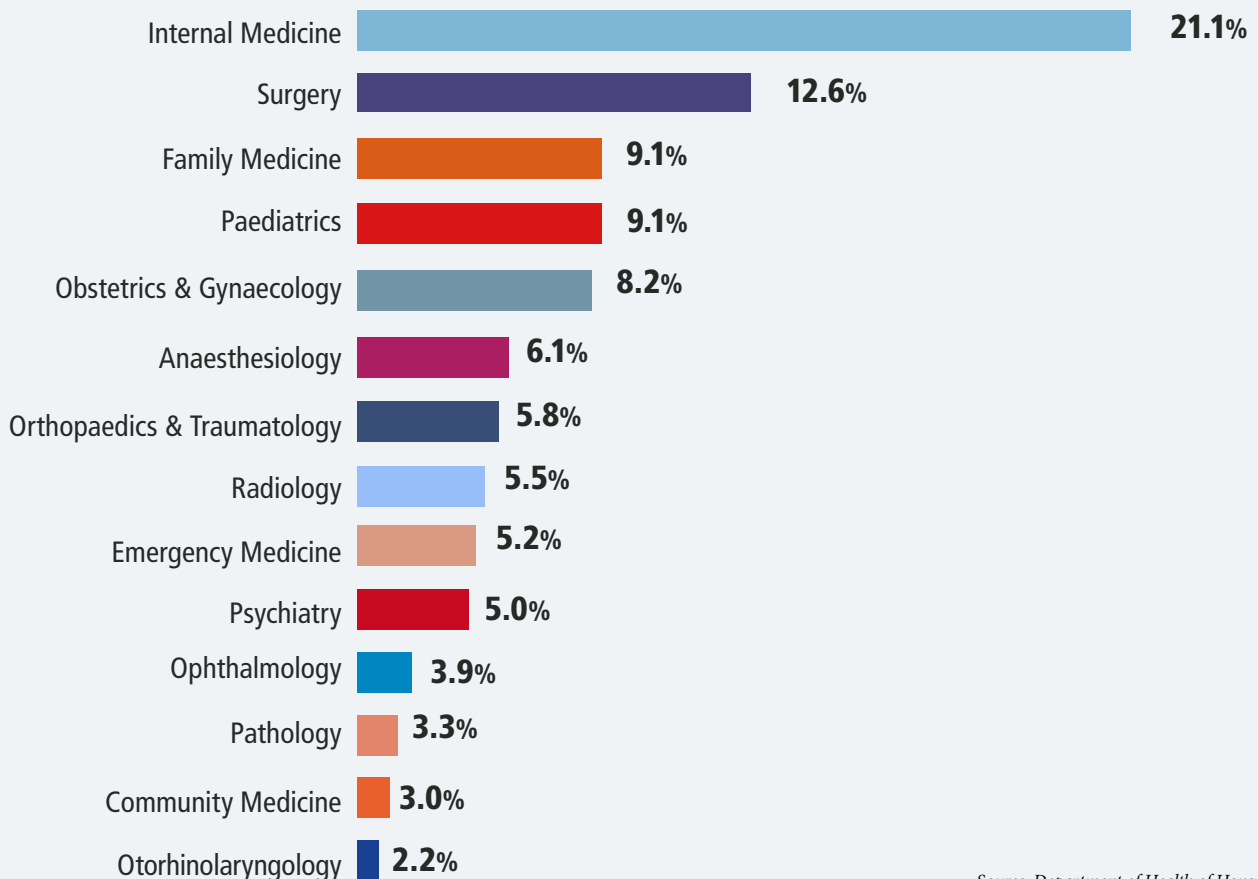


HEALTH EXPENDITURE COMPARED TO OTHER COUNTRIES

TOTAL HEALTH EXPENDITURE AS % OF GDP



KEY SPECIALTY AREAS



Source: Department of Health of Hong Kong



SAFEGUARDING THE PUBLIC HEALTH INTEREST

Hong Kong is known to be one of the healthiest places in the world. As a result of its well-developed healthcare and medication system, residents of Hong Kong enjoy a life expectancy of 85.9 years for women and 80 years for men. Due to the historical fact of having been a British colony, Hong Kong's current healthcare system is similar to the National Health Service (NHS) system in the UK. In Hong Kong, the relevant authority is the Food and Health Bureau, which is in charge of policy-making and allocates resources to run Hong Kong's health services in the most efficient way. This bureau also ensures that policies are carried out successfully to protect and promote public health, provide all-inclusive healthcare to every Hong Kong citizen and to ensure that no one is denied adequate medical treatment.

When it comes to healthcare spending, Hong Kong's government budget for medical health services is continuously increasing. The government has been meaningfully involved in both the funding and provision of health services mainly through tax financing and personal insurance. For instance, government subsidies account for a large amount of the revenue of public hospitals (typically over 80 percent) and, therefore, patients' expenses in public hospitals are much lower than the corresponding cost of the treatment. Hong Kong's annual government recurrent expenditure on healthcare increased by 40 percent from 2007 to 2012,

reaching almost USD 5.8 billion in 2012, and accounting for 17 percent of the Hong Kong government's total expenditures.

The Food and Health Bureau has many divisions including Agriculture, Fisheries and Conservation Department, Department of Health, Food and Environmental Hygiene Department, and the Hospital Authority (HA). The latter is the administrative body managing all the public hospitals and health institutes in the country. It currently manages 42 public hospitals and institutions, 48 specialist outpatient clinics, and 73 general outpatient clinics. Public hospitals provide approximately 90 percent of the overall medical service and 29 percent outpatient medical service in the country. Hong Kong's enviable public hospital system provides a comprehensive range of quality services at a very low level of user charges (USD13/d/bed), representing approximately 95 percent subsidies compared to the cost.

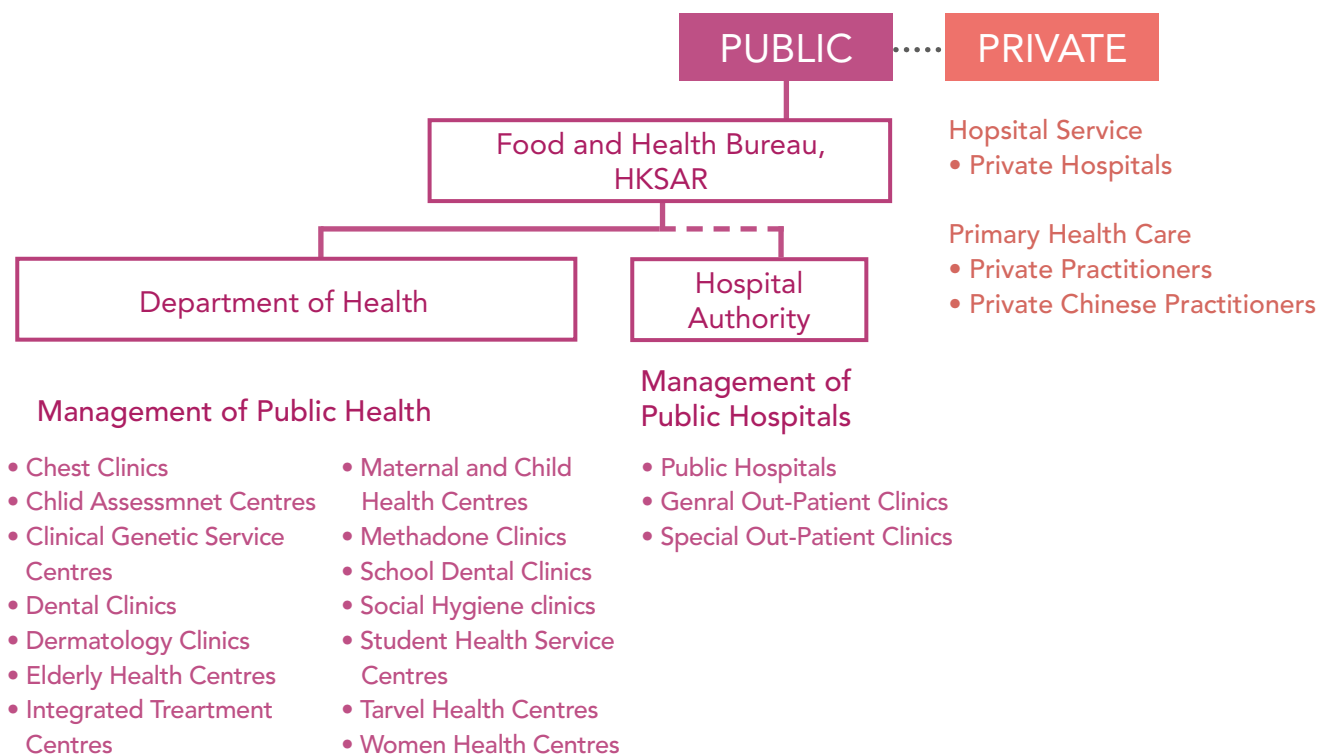
Nevertheless, as in most advanced economies, the increasing financial burden of healthcare on the government has resulted in a number of problems familiar to many public systems, including overcrowding, long waiting times and excessive bureaucracy. This is why in recent years, debate has ensued over the need for a national health insurance scheme, beginning in 2008 when the government raised the idea of a mandatory health insurance scheme. This met significant public opposition and plans were quickly shelved in



favor of a Voluntary Health Insurance Scheme (VHIS), which is today still under public consultation. To further improve public hospital services, in 2016, a ten-year Hospital Development Plan with a dedicated provision

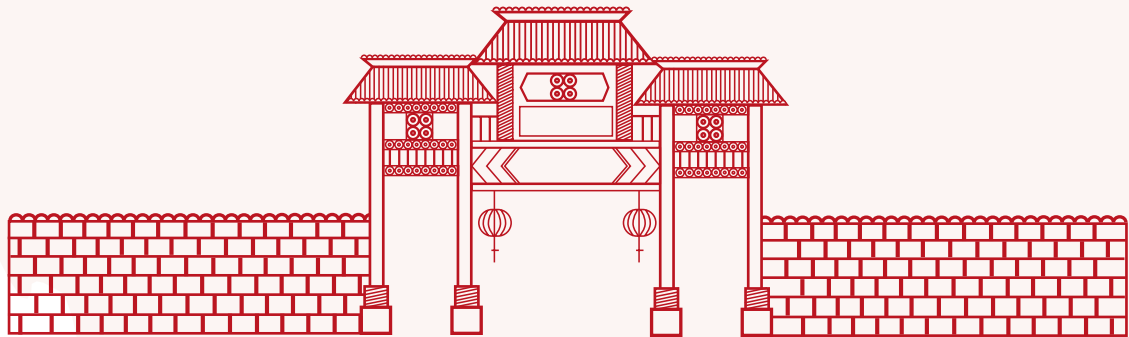
of HKD 200 billion (USD 25.6 billion) was launched with measures like expanding or redeveloping more than 10 hospitals, adding over 5,000 hospital beds and building over 90 new operating theatres. 🌱

OVERALL STRUCTURE OF THE HEALTHCARE SYSTEM AND THE SERVICES PROVIDED IN HONG KONG





HONG KONG AS AN EAST-WEST SUPER-CONNECTOR



GATEWAY INTO MAINLAND CHINA

Hong Kong enjoys a privileged position at the southern tip of mainland China with a distinguished history of international commerce long before Shanghai and Beijing became the bustling metropolises they are today. As a Special Administrative Region (SAR), Hong Kong benefits from the unique ‘One Country, Two Systems’ where it can maintain robust international norms like IP frameworks, legal infrastructure, sophisticated financial framework and free capital flow while enjoying economic and political proximity to the vast hinterland market. A key pillar in this solid foundation is the 2003 Closer Economic Partnership Arrangement (CEPA), the first ever free trade agreement (FTA) ever concluded between the two,

which represented the highest level of China’s opening to the outside world. Little surprise then that 50 percent of Hong Kong’s trade is with the motherland.

Despite these many natural advantages, Hong Kong’s historical standing as regional headquarters for many pharma and medtech companies has been ceded to Singapore for the Asia-Pacific region and Shanghai for the mainland Chinese market – perhaps understandably given the feverish pace at which the latter has developed into the world’s second-largest pharma market. It is therefore a matter of some urgency for Hong Kong to reflect on the niche it could – and should – occupy in the future by leveraging on its considerable assets.

A sector growing in prominence has been clinical research. Hong Kong now boasts two

clinical trials centers, the Clinical Trials Center at the University of Hong Kong (HKU CTC) and the Clinical Research Management Office at the Chinese University of Hong Kong (CRMO CUHK), accredited by the Chinese Food and Drug Administration (CFDA). What was especially notable was the CFDA recognition of the Phase I Clinical Trials Center at HKU CTC in July 2016 because up until that point, there had been no official accreditation for any Phase I center in China.

Additionally, many local companies are seeing runaway success by implementing strategic growth plans capitalizing specifically on their proximity to mainland China. The way forward will be investing even more heartedly into the indigenous industry, who can best seize the advantage



GATEWAY INTO INTERNATIONAL WATERS

The river of opportunity increasingly flows both ways. Hong Kong has been the world's second largest IPO (initial public offering) market by value for the past two decades, driven in part by a flood of Chinese mainland companies listing themselves on the Hong Kong Stock Exchange. In 2013, for instance, a staggering 127 of China Fortune-500 firms – with a total revenue of USD 778 billion – listed Hong Kong as their headquarters. Johnson Chui, the managing director and head of Asia-Pacific equity capital markets at Credit Suisse said, “Prior to 1997, the Hong Kong stock market was dominated by traditional Hong Kong-based companies, such as British conglomerates or local companies in the utilities, finance, real estate or trading sectors”. In 2016, mainland Chinese companies raised HKD 156.6 billion (USD 19.9 billion) in the city, representing 82 per cent of all listings.

The reason for such a huge presence is manifold: Hong Kong was ranked 15th on the Corruption

Perceptions Index 2016, indicative of the transparent environment companies can rely on. This is thanks to Hong Kong's strong public administration as well as its Independent Commission Against Corruption (ICAC), which ensure that companies are free to pursue their business interests on a level playing field. In addition, when it comes to management experience in terms of international business, Hong Kong ranks among the very best in the world, partly due to its highly skilled professional workforce. Hong Kong is also deeply embedded within the international ecosystem, which not only gives mainland Chinese companies a significant credibility boost but also access to a global network of suppliers, distributors and other service providers.

With China's ambitious Greater Pearl River Delta initiative taking off, this momentum can only continue for the foreseeable future as Hong Kong takes the competition to the next level. 🌐

THE GREATER PEARL RIVER DELTA REGION

The map shows the Greater Pearl River Delta region in southern China. Major cities are marked with blue dots and labeled: Zhaoqing, Foshan, Mangmen, Zhongshan, Zuhai, Guangzhou (two locations), Huizhou, Shenzhen, Macao, and Hong Kong. The Pearl River is depicted flowing through the region.

Novartis Pharmaceuticals



Changing the practice of medicine

At Novartis, we harness the innovation power of science to address some of society's most challenging healthcare issues. Our researchers work to push the boundaries of science, broaden our understanding of diseases and develop novel products in areas of great unmet medical need. We are passionate about discovering new ways to improve and extend people's lives.





A NOBLE CALLING

Hong Kong has only one Nobel Laureate, Sir Charles K. Kao, who is known as the ‘Father of Fiber Optics’ for his pioneering work in the development and use of fiber optics in telecommunications – no mean feat for a city-state of only 7.2 million. If there is a strong contender for the second Nobel Prize, however, Dennis Lo, Professor of Chemical Pathology at the Chinese University of Hong Kong (CUHK), has a pretty strong case, as the first scientist in the world to discover the presence of fetal DNA in a pregnant mother’s blood plasma. His discovery gave birth to the new field of non-invasive prenatal testing (NIPT).

Lo explains, “we use [NIPT] to find out genetic information about the baby, e.g. whether the baby is a boy or a girl and this is useful because some genetic diseases are sex related – like hemophilia for instance. We also use this to determine the blood type of the baby, because sometimes if the mother and the baby’s blood types do not match, the mother can produce antibodies which can cross the placenta and attack the baby’s blood cells. We also use this technology to detect Down syndrome.”

Scientific research is a painstakingly long process; Lo has dedicated his life to his work. It was in 1997 that he conceived the idea: a fetus could release its DNA into the plasma of its pregnant mother. Lo recounts, “when I first started working on this area of [circulating DNA], it was regarded as a non-mainstream area and many people did not believe that this would lead anywhere [... but] I discovered that an average of 10 percent of the plasma DNA of a pregnant woman is derived from her fetus and after two hours, the baby is born the fetal DNA is gone from the mother’s plasma.”

But while that discovery vindicated Lo’s academic idea, the commercialization of it was another



DENNIS LO PROFESSOR OF CHEMICAL PATHOLOGY,
CHINESE UNIVERSITY OF HONG KONG (CUHK)

torturous path. Lo muses, “it took me ten years to develop a robust technology to utilize this plasma DNA for diagnostic purposes. We came up with this technology around 2007-2008, after which it took us another few years to do clinical trials.” The first product launched was a revolutionary non-invasive Down syndrome test that is now available in 90 countries.

Lo’s work is not close to being done, however. Lo reveals, “beyond NIPT, my research team hypothesized the phenomenon of a fetus releasing DNA into the blood of its pregnant mother is a mirror image of a cancer releasing tumoral DNA into the blood of a patient ... Almost every single characteristic that I can think of in the field of cancer detection using circulating DNA would have its parallel in the field of NIPT.” Lo has since cofounded a new company, Cirina, in pursuit of this year. In May this year, Cirina merged with San Francisco’s GRAIL, an Illumina spin-out, with the aim of achieving early-stage cancer detection and to make another groundbreaking discovery in the oncology space. ❄️



At Roche, we work with a purpose.

We discover and develop innovative medicines and diagnostic tests to help people live better, longer lives.





HONG KONG

DAWN OF A NEW ERA

Since Hong Kong's handover to China in 1997, the city has transformed itself into one of the world's leading financial centers with an awe-inspiring reputation for efficiency and quality of life, with its prosperous economy gifting it one of the highest GDP per capita in the world. As the global landscape evolves, however, this global city recognizes the need to continuously enhance its competitiveness. As of July 1, 2017, the Special Administrative Region (SAR) has been led by a new administration headed by The Honorable Carrie Lam, Hong Kong's first female Chief Executive, who has emphasized the need to bridge the gap between the entrepôt and mainland China.

One area of clear mutual interest and rich potential in terms of collaborative partnership is biotech, which has been identified as one of the nationally strategic emerging industries in China's Plans for National Economic and Social Development since 2010. The latest iteration, the 13th 5-year Plan (2016-2020) specifically selected collaboration in areas of technology and innovations between China and Hong Kong to be strengthened.



CARRIE LAM

chief executive,
Hong Kong Special
Administrative Region
(HKSAR) of the
People's Republic of
China

While the biotech sector is nascent, the wider life sciences industry is considerably advanced in Hong Kong courtesy of the historical role it used to play as regional headquarters for many of the world's largest pharmaceutical and medical devices companies. Today, the usual suspects see in Hong Kong's domestic market not only a highly sophisticated, affluent and innovation-driven population with specific healthcare needs but also a unique opportunity to

import cutting-edge innovations into the huge mainland China market, which continues to experience significant unmet medical needs. Nevertheless, Hong Kong is a relative latecomer to the game with regional competitors like Taiwan, South Korea and Singapore having already etched out strongholds in various industry niches. While competition is fierce, recent developments suggest that Hong Kong is gearing up to propel itself into a new era of life sciences dominance.

THE VISIBLE HAND OF THE STATE

Hong Kong understands that four sectors – government, industry, universities and research centers (管产学研) – need to come together in order to drive the future innovation and technology scene of Hong Kong. The very first policy address of the first Chief Executive of Hong Kong, Tung Chee-haw, in 1997, had already recognized this; the Honorable Tung proclaimed that Hong Kong must chart a new course for development through innovation and the use of new technology, because the global economy had entered a new era of increasing competitiveness. Closer to home, with new vistas in mainland China opening up in the 1970s, many of Hong Kong's heavier industries had naturally moved northward leaving only the real estate and finance sectors booming and academic research concentrated in universities.

While previous governments had introduced initiatives to promote innovation, such as the establishment of the Innovation and Technology Commission

(ITC), the former administration made a concerted effort to formalize the national strategy with the set-up of a new Innovation and Technology Bureau (ITB), the Hong Kong equivalent of a Ministry. Led by Secretary of Innovation and Technology Nicholas Yang, the aim is to develop Hong Kong into a knowledge-based economy and an innovation hub for technology and its application in the region. As Yang exhorts, "it is important to realize that innovation is a continuous process. The fact that you are number one today does not guarantee that you will stay number one, five to ten years from now."

Dr. Cecilia Pang, the biotechnology director of ITC, explains, "[our mandate is to] "firstly, to provide funding for a variety of programs designed to foster Hong Kong's innovation and technology environment, and secondly, to develop the necessary infrastructure for that to take place". As a result, ITC has established a number of R&D institutes and entities, most notably, the Hong Kong Science and Technology Parks Corporation (HKSTP) as well as the Applied

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**NICHOLAS YANG**

secretary of
Innovation and
Technology, Hong
Kong Special
Administrative Region
(HKSAR)

**CECILIA PANG**

biotechnology
director, Innovation
and Technology
Commission (ITC)

Science and Technology Research Institute (ASTRI), which now function independently with their own executive board, mission and focus.” While IT has garnered most attention in recent times, with “the IT area gets the largest share [of funding while] biotech is usually around 10 to 20 percent of the total”, this may not give a fully representative picture of the importance of the sector. Pang contextualizes, “biotech is now becoming very multidisciplinary. Many projects that involve non-biochemical elements such as IT and engineering might have been classified under other technology areas, so in reality the overall sector is bigger than what the funding figures tend to suggest”. She concludes, while Hong Kong remains “a latecomer to the industry because we do not have a large pharma industry base ... we are very strong in academic research,

especially in biomedical and clinical research. A lot of groundbreaking work is currently being undertaken in areas like molecular diagnostics and new medical treatments.”

A landmark initiative under ITC, the Hong Kong Science and Technology Parks Corporation was established in 2001 to consolidate Hong Kong’s existing assets like the InnoCenter and three Industrial Estates, with the vision of behaving as a national incubator for promising ideas and start-ups. Chairwoman Fanny Law Chiu-fen decided to take the organization to the next level upon her appointment in 2013. She recounts, “we decided that instead of simply providing premises for R&D companies, we should be much more proactive in creating a vibrant innovation ecosystem.” Three ‘C’s were identified: ‘connect, collaborate and catalyze’. This means, she illustrates, “We proactively connect with all stakeholders in the ecosystem, we foster collaboration between universities and industries, and we want to catalyze the growth of our companies, by providing a nurturing test-bed for

companies to grow and test-drive their products.”

Today, HKSTP offers a multitude of services from incubation with mentorship, central laboratories, workshops, hardware and software components, exhibition area and amenities, occupying a central position in Hong Kong’s biotech innovation ecosystem. Law stresses, “As a result of our scale, we offer companies an ecosystem that they would not otherwise have access to. [For instance], through the diversity of companies represented here, we provide a platform for the interdisciplinary exchange of ideas and inspiration. We organize conferences and seminars nearly every day on various topics, and also offer the full suite of professional services, from IP to accountancy to legal.”

Despite their best efforts, however, Hong Kong is arguably the slowest amongst the ‘Asian Tigers’ to capitalize on the USD 2.5 trillion (2015) life sciences industry. While Japan was the trendsetter with its post-war technology and economic leap forward and is, of course, today the third largest drug market globally, South Korea has established a serious global R&D leadership with a targeted focus on the conduct of clinical trials; Singapore not hosts the regional headquarters of most of the world’s largest pharma companies but also significant regional manufacturing operations; and Taiwan has built a thriving indigenous biotech scene intimately linked to the most vibrant biotech ecosystem in the world, the US. With the life sciences industry being one of the most globalized sectors in the world, Hong Kong understands that it cannot neglect to capitalize on its international positioning in order to attract the expertise, funding and products required to build a thriving domestic industry. This critical undertaking inevitably falls to the inward investment promotion agency, Invest Hong Kong, and associate-director-general, Charles Ng, associate director-general of Invest Hong Kong, takes up the gambit with aplomb, enthusing,

**FANNY LAW
CHIU-FEN**

chairwoman, Hong
Kong Science and
Technology Parks
Corporation

**CHARLES NG**

associate director-
general, Invest Hong
Kong



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“Hong Kong is in a sweet spot because we are part of the world’s second largest economy ... Around the world, we are the only country where the West and East literally converge. We have the best of both worlds in terms of access to the mainland Chinese market, talent and resources as well as international standards and conventions. Not only will the best of mainland China look to use Hong Kong as a touchpoint to grow globally, MNCs view Hong Kong as a gateway into mainland China and Asia.”

A tough issue that the agency grapples with is the high cost of living; Hong Kong ranks as one of the countries with the highest cost of living in the world. Ng demurs, “Cost is inevitably a challenge for potential investors as Hong Kong is not the cheapest place. However, the good thing is that there are choices for different investor profiles. This is precisely our mandate: to guide and support companies by offering advice on the different options available in Hong Kong, tailored to their specific needs.” He concludes,

“Looking at all the healthcare, life sciences and biomedical hubs globally, we are rather uniquely placed to support speedy company set-up, commercialization and development.”

LAND OF THE UNICORNS

In 2017, Hong Kong fended off perennial competitors, life sciences hubs and innovation powerhouses, Switzerland and Singapore, to rank first in the International Institute for Management Development (IMD)’s World Competitiveness Rankings, clear evidence that conditions are ripe in Hong Kong to develop the first biotech unicorn – a start-up company valued at over USD 1 billion.

While many of Hong Kong’s inherent business advantages lend themselves naturally to the biotech industry, “Hong Kong’s status as the world’s leading



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**ALBERT YU
CHEUNG-HOI**

chairman, Hong
Kong Biotechnology
Organization (HK BIO)

commercial and financial center has inevitably overshadowed its emerging success in the biotech industry,” Professor Albert Yu Cheung-Hoi, Chairman of the Hong Kong Biotechnology Organization (HK BIO), admits. Nevertheless, in recent years, “looking at the government’s policies and the number of people interested in biotechnology, the percentage of interest and enterprise has critically improved. Even

traditional businesses are beginning to acknowledge the power of biotechnology.” Most notably, the Chinese Manufacturers’ Association of Hong Kong (CMA), a traditional trading association in Hong Kong, has recently recognized biotechnology as one of Hong Kong’s major industries.

Yu waxes lyrical about the advantages of building a biotech start-up in Hong Kong: “Hong Kong is very international and is arguably the most westernized

Asian location. It has the best mix of Western and Asian cultures and influences. The multicultural environment fosters a strong global sense and allows foreigners to feel comfortable being in Hong Kong especially as there is no language barrier. Hong Kong’s reputation as the freest economy in the world is matched by a high degree of business integrity and ethics. A stable economic and political environment makes Hong Kong an appealing ground for capital funding as well as talent aggregation. The transport infrastructure we have built is convenient, extensive and sophisticated while the legal system is simple, fair and transparent.” The clincher? “We describe ourselves as a Chinese city outside of China. I believe Hong Kong will be an excellent platform for local companies to connect with the rest of the world and vice versa.”



JUN WANG

founder and CEO,
GeneHarbor

BRINGING HARMONY TO DIAGNOSTICS

William Yim, executive chairman and CTO, and Kelvin Chiu, CEO, of Sanwa Biotech, have a catchy descriptor for their groundbreaking microfluidic lab-on-a-chip system, a portable rapid diagnostic platform that can perform diagnostic tests in 15-20 minutes instead of the hours it normally takes. To explain very technically, “our product comprises of three components: our Array-based LED-induced fluorescence ImmunoAssay (ALiA) platform device, single-use bio-chip, and biomarker array for the diseases you want to test for,” Chiu nods. “This test platform is based on antigen-antibody proteomics, a protein-based immuno-assay with a ‘key to keyhole’ mechanism, which is well-proven and easily adapted to various diseases diagnosis and screening.”

What this means, essentially, Yim translates, is that “our product model is tuned for personalized care on specific POCT needs, and operates more like an espresso machine: the technology platform is set but there are different “flavors”. The first two ‘flavors’ that they are ‘producing’ for the clinical market are a multiplex respiratory diseases panel and a tropical disease panel, with more to come in the pipeline. This multi-pronged approach extends to non-clinical markets as Sanwa

Biotech is producing veterinary disease panels for pets as well as products for food safety testing. Yim explains shrewdly, “while working on all these in parallel requires more effort and work, we believe the synergies between these developmental paths outweigh the negatives. Lessons we learn from our non-clinical development and launch can be applied to the clinical side. The non-clinical sector is also less stringently regulated so we expect market launch and therefore revenue generation to happen earlier.

Chiu concludes: “Our name, Sanwa Biotech, derives from an old Chinese expression (三和) meaning ‘heaven, earth, and man in harmony’. In the business context, it refers to the harmony between opportunities, human talent and the market needs. This is what we are working towards.” Given the breathtaking speed at which Sanwa Biotech has developed, with prototypes for three different markets already developed and in preparation for the ISO-13485 certification process for their production facilities by end-2017 having only completed their seed round financing in late-2016, it is clear that their concept of ‘harmony’ has been grasped.



Local biotech success story GeneHarbor Biotechnologies validates the supportiveness of the environment in Hong Kong. “I think that an original innovation company requires four major ingredients for survival: money, manpower, information, and incentive. For each of those ingredients, I daresay Hong Kong is better than Taiwan and Singapore. To add to that, in Hong Kong, the Closer Economic Partnership Agreement (CEPA) grants us unfettered access to the mainland China market, which is huge. Another plus for Hong Kong: according to QS2018, four of the universities in Hong Kong rank in the top 100 in the world,” assesses Dr. Jun Wang, founder and CEO.



IF YOU HAVE A VIABLE PRODUCT, IT IS ACTUALLY A LOT EASIER TO RAISE MONEY IN CHINA THAN IT IS IN THE US – AND THE VALUATION IS ALSO HIGHER

SHAWN LEUNG
SINOMAB BIOSCIENCE

Fellow biotech founder and academic Dr. Shawn Leung strikes a more cautious note. “Hong Kong’s proximity to China has always been a huge advantage but this is much less of a selling point today than it was two decades ago because China has opened up. Today, Big Pharma, top academics and financial investors are going directly into China, be it in Shenzhen, Shanghai or elsewhere. China today also has the capital. I believe that if you have a viable product, it is actually a lot easier to raise money in China than it is in the US – and the valuation is also higher.” For him, Hong Kong’s value proposition is elsewhere. “Hong Kong retains a crucial edge. It has very conducive intellectual property (IP), legal and communication systems in place to develop research-intensive, high-value, proprietary products. This is not something that companies necessarily want to do in China; if an employee decides to leave with valuable data, the sheer physical size and population density of China mean that he can easily disappear without a trace. In Hong Kong, the infrastructure is trustworthy and robust.” He emphasizes, “It has always been my belief that this is Hong Kong’s largest selling point and the niche that Hong Kong should occupy.”

For Christian Hogg, CEO of Hutchison China MedTech (Chi-Med), one of the most successful biotech companies based in Hong Kong with a market capitalization of USD 2.74 billion, the story is more nuanced. He says, “Hong Kong’s core advantage is the strength of the financial services industry here, which is increasingly interested in the healthcare sector, seen to be a high-growth sector. The transparency of the equity capital markets in Hong Kong and the increasing sophistication of their understanding of the healthcare space are big positives.” That said, given the relative dearth of successful biotechs locally, it stands to reason that there continue to be limiting factors that Hong Kong should address. Hogg warns, “for biotechs to be able to take advantage of the financial environment in ten years, the government needs to implement policies today to foster a number of biotech companies. The cost of operations here is also high and the ecosystem is much smaller than that of other hubs in the world like Boston, Shanghai and Cambridge, in the UK. Hong Kong has a huge advantage in terms of its proximity to China, which we should capitalize on more.”

The proof is always in the pudding, and Hong Kong biotechs have managed to win international recognition. A notable example is Sanwa Biotech, which won the prestigious Gold Medal from the 44th International Exhibition of Inventions Geneva in 2016 for its microfluidic lab-on-a-chip system. Their ambitious goal was to target “time-critical and life-threatening illness and our goal is to make



SHAWN LEUNG

CEO, SinoMab
Bioscience



CHRISTIAN HOGG

CEO, Hutchison China
MedTech (Chi-Med),



WILLIAM YIM

executive chairman
and CTO, Sanwa
Biotech



KELVIN CHIU

CEO, Sanwa Biotech



their diagnosis simple, mobile, and rapid. We want to simplify the high-tech, high-quality, high-throughput laboratory testing process that can be brought to the frontline to be user friendly enough to be used by healthcare providers,” William Yim, executive chairman and chief technology officer points out.

In Hong Kong as elsewhere, the key to success for a biotech is the ability to translate science and technology into commercial value. CEO of Sanwa Biotech, Kelvin Chiu, contextualizes the challenges they had to contend with: “POCT diagnostics is a trend that has gained momentum in the past five years, promoted mainly by physicians and healthcare policymakers that appreciate the value in allowing healthcare providers to make more informed decisions while keeping costs low”. At the same time, while “microfluidic chips have been a hot topic for many years, we have not really seen many successful product launches in the market ... limiting its use to the academic R&D setting. In order to make it viable for commercial and/or clinical usage, we had to develop a fully integrated system on a very small scale that was still versatile enough to adapt to multiple different applications. Furthermore, we are offering complex, protein-based multiplex diagnoses, which requires stringent risk management control as well as regulatory standards at both national and international level, which further increases the commercialization barrier.”



FOR BIOTECHS TO BE ABLE TO TAKE ADVANTAGE OF THE FINANCIAL ENVIRONMENT IN TEN YEARS, THE GOVERNMENT NEEDS TO IMPLEMENT POLICIES TODAY TO FOSTER A NUMBER OF BIOTECH COMPANIES.

CHRISTIAN HOGG CHI-MED

GeneHarbor’s Wang offers similar advice to aspiring bio-entrepreneurs: the first step should be to “locate the key problems, or the pain spots, of the industry. One of the serious lessons I have learnt during my early years of transition from an academic into an entrepreneur is that you have to think from the industry perspective, driven not by the curiosity of a scientist but the needs of the industry.” For instance, his company’s success today was precipitated by his

SECRETS OF A MARKET LEADER



JOHNNY TSE

—
general manager,
Roche
Diagnostics

In spite of all the challenges relating to Hong Kong’s market size and competitiveness, global market leader Roche Diagnostics – one of the largest MNCs in the local life sciences sector – has maintained a phenomenal track record in Hong Kong, with general manager Johnny Tse as the faithful vanguard of the affiliate for the past seven years. Tse shares the three factors driving the affiliate’s noteworthy performance.

First: people development. He asserts, “our competent salesforce is an asset, particularly in this industry”. To keep their edge sharpened, Roche Diagnostics focuses extensively on staff welfare and development. Tse emphasizes, “Roche places diversity and inclusiveness at the core of the company ... we conduct training and workshops to help our staff understand different working styles and personalities to facilitate a more conducive work environment.” This consideration extends to logistics as well, with Roche Diagnostics having implemented flexible work arrangements to counter the long commutes that some of their staff faced.

Second: after sales support. “Whether we are in a direct sales or distributor market ... a key differentiator is that we invest a lot of resources in our support teams to ensure that we provide top-notch service to our clients ... which is something not all our competitors can provide.” Not content to rest on their laurels, Tse brainstorms, “I would like to facilitate the transition of Roche Diagnostics Hong Kong from being a supplier of products and services to be a solutions provider [as] the point of diagnostics is to generate the data necessary for laboratories or clinicians to make healthcare decisions for their patients.”

Finally: local talent. Tse proudly announces, “Roche Diagnostics prioritizes the hiring of local talent in its affiliates. There is an emphasis on adapting the company to meet local customer requirements and local teams are empowered to make decisions by themselves.” This is particularly crucial in a small but highly sophisticated market like Hong Kong that may require global strategies to be closely adapted to the facts on the ground.



realization that in the global chemicals industry, while 60 percent of household and fine chemicals, including pharmaceuticals, could be manufactured using biological catalysts, the vast majority, around 98 percent, is being manufactured using chemical catalysts. This meant a market size of USD 2 trillion globally. He explains, “The primary reason is that “enzymatic processes have thus far been very expensive, due to the high cost of enzymes, lofty cost of the necessary co-factors, and low efficiency of the enzyme reactors.” For two decades, his team toiled to create “an innovative enabling, comprehensive biotechnology platform called the Immobilized Enzyme Assembly for Cascade Biocatalysis”, which managed to dramatically reduce the cost of enzymes by 80 percent, or even more, in many cases. Wang stresses, ““In doing so, we are able to translate many scientifically feasible but commercial nonviable processes into commercially viable processes.” With his eyes always on the prize, he concludes cheekily, “the focus now is to translate our technology advantage into money, to convert the science into dollar signs (\$), and to convert our IP into an IPO!”

THE DOMESTIC MARKET: DAVID TAKES ON GOLIATH

With the Asia-Pacific region (APAC) including 60 percent of the world’s population and some of the largest pharma markets in the world like China and Japan, Hong Kong, with its modest domestic market of under USD 2 billion, does not often dominate company strategy. Nevertheless, its speedy regulatory approval process, sophistication and value mean that shrewd management can often push the affiliates to punch above its weight within global organizations. In particular, the ease and speed with which innovative products reach the market as well as the presence of a strong private sector, mean that Hong Kong is one of the first markets in the region when it comes to product launches. Alexandre de Mural, Managing Director of Merck Healthcare (Hong Kong) and General Manager of Merck Biopharma (Taiwan) explains, “Hong Kong, like most mature markets, is driven by the introduction of innovative products.



ALEXANDRE DE MURAL

managing director, Merck Healthcare (Hong Kong) and general manager, Merck Biopharma (Taiwan)



SABRINA CHAN

senior executive director, Hong Kong Association of the Pharmaceutical Industry (HKAPI)



ANDY BARNETT

general manager, Roche

Developing and implementing the right market access strategy is therefore very important.” This is why, following the 2016 restructuring of the Asia-Pacific (APAC) region, Merck separated the volume markets of China, Japan and India and placed Hong Kong into another subgroup of advanced markets, which includes Taiwan, South Korea and Australia.

Sabrina Chan, Senior Executive Director at the Hong Kong Association of the Pharmaceutical Industry (HKAPI), attributes this partially to the association’s efforts. Their mission being to “expedite healthcare solutions to patients in Hong Kong ... it is crucial to invest in communication and collaboration between different stakeholders.” She reminisces, “Looking back historically, the process of drug registration used to last 24 months. Nowadays, it lasts on average seven to ten months ... The Hong Kong market is more conducive in terms of regulation.” Nevertheless, she cautions, “working towards increasing access is very challenging ... there is always room for improvement. We are in the process of discussion with the drug administration office to find beneficial solutions for the industry ... for instance, we have suggested the implementation of electronic submission ... which they have adopted. The government here is certainly open to starting a dialogue and making certain improvements within limited resources.”

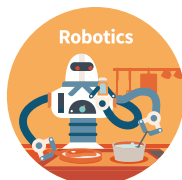
This collaborative environment goes a long way to explaining why the world’s third-largest pharma company, Roche, sees significant value in Hong Kong. General Manager, Andy Barnett, says, “Roche has always taken a very holistic approach in every country we are in, and we emphasize full collaboration with local stakeholders in order to support healthcare

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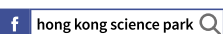
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provision locally. While Hong Kong may have a small population size, in the Asia-Pacific region, it is the fifth-largest market for us – after China, Australia, South Korea and Taiwan. Our business in Hong Kong is performing very well, as I mentioned, and so Roche does identify very strong commercial value in continuing to invest here.”

While the market size is small, however, its complexity means that any strategy executed needs to be tailored to the Hong Kong market, not simply imposed from the global level. Barnett’s first move was therefore “to implement some strategic structural changes in order to better drive the affiliate’s performance ... This was important because Roche is a very innovative company with a strong pipeline and in the last 18 months, we launched five new molecules. Hong Kong is usually one of the first markets in the region to launch new products, typically after only a few months after Europe, so it was important to manage this aspect of the business here as efficiently as possible.”

“

IN A 7.2 MILLION POPULATION MARKET WE HAVE TO LOOK MORE TO THE WAY OF DOING BUSINESS TO DIFFERENTIATE OURSELVES AS OPPOSED TO PATIENT POPULATION SIZE

LAWRENCE WONG FERRING

Barnett expounds, “one main initiative was the clustering of functions, so for instance, placing people in teams to support new product launches, and grouping the management of older products under one single team”, which was particularly important because Roche is a very innovative company with an extremely strong pipeline yet simultaneously Roche’s invigorating growth in Hong Kong had been driven not just by this pipeline but also organic growth in older products, rather uncharacteristically for a specialty pharma company! As a result, a very tailored strategy needed to be implemented to exploit both growth areas.

Similarly, Scott Curley, general manager of AstraZeneca Hong Kong highlights, “In line with other top pharma companies, AstraZeneca identifies

around 10 to 11 markets – the US, Japan, China, the top five EU markets, Brazil, Russia and sometimes Australia – that account for 80 percent of our business. Coming to Hong Kong as a general manager, my thinking had to become much more operational as I had to execute and deliver the global strategy in the local context with demonstrable results.” Curley’s global experience has clearly borne fruit, with the affiliate delivering 17 percent growth in 2016 and expecting to continue on this growth trajectory through to 2025 and beyond.

Setting concrete goals that capitalize on the specific strength of the affiliate is fundamental. While regulatory approval speeds in Hong Kong may not be as fast as the US or Europe, the process is rather straightforward: companies simply need to deliver the necessary dossiers demonstrating registrations from two reference countries. This regulatory ease dovetails nicely with AstraZeneca’s global vision to deliver around 10 new molecules across their three core areas of cardiovascular and metabolic disease, oncology, and respiratory disease.

Curley reveals that upon his appointment, “the Hong Kong affiliate set a target to launch 10 new molecules during my three years here. 2.5 years in, we have already launched nine so I hope to be able to exceed that goal before I leave!”

The surprisingly high-value nature of the Hong Kong market also goes a long way to explaining the diversity and breadth of pharma players in Hong Kong, with most of the top 50 represented. What is more, even mid-sized specialty players are able to bring in a significant proportion of their global portfolio, an impressive feat for a market of this size. As an example, general manager of Ferring Hong Kong, Lawrence



SCOTT CURLEY

general manager,
AstraZeneca



LAWRENCE WONG

general manager,
Ferring

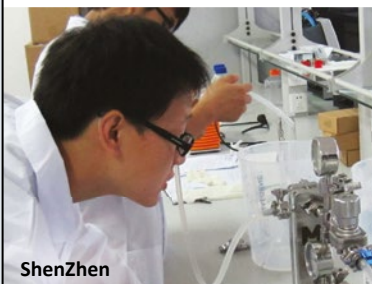


DORINE LEUNG

general manager &
country vice-president,
Novartis



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Wong boasts, that they are able to have “the majority of Ferring products marketed in the city, covering the therapeutic areas of Fertility, Obstetrics and Gynecology, Urology, Gastroenterology and Orthopedic Surgery. This comprehensiveness makes Ferring Hong Kong a rather prominent entity within the region.” He elaborates, “in a 7.2 million population market, we have to look more to the way of doing business to differentiate ourselves as opposed to patient population size. With reference to some European markets of relative sizes, reliable performance is continuously delivered, meaning that the value we generated to the markets here is reflected and rewarded.”

In addition, “throughout the years, Ferring Hong Kong has played a significant role in supporting corporate strategies on business development across Asia Pacific. The recent relocation of regional operations to Singapore enables the company here to serve as a pilot for the implementation of new concepts on business operations as well as collaboration with healthcare stakeholders, with intense focus on its unique domestic market in the city.”

While market access may not be an issue, the other piece of the puzzle may prove more difficult to tackle: pricing and reimbursement. As Novartis general manager and country vice-president Dorine Leung puts it, “Hong Kong has one of the fastest registration timelines in the region after Singapore but for the pharma business, the challenge comes with reimbursement and financial support from the government. Unlike oncology,

which attracts a lot of public – and therefore government – attention, our portfolio consists of more mass-market products that cater to lower-profile conditions. For instance, our new product for chronic heart failure has robust data demonstrating a decrease in mortality and hospitalization rates but as chronic heart failure is a silent disease, it was difficult to raise the profile of this new drug, even though it would definitely enhance patient welfare.” The lifetime financial burden of mass-market products also puts a significant strain on the Hospital Authority’s budget.

Nevertheless, the affiliate continues to dedicate resources to increasing their presence in Hong Kong in order to bring the necessary products to patients in need. Leung explains, “there are some therapeutic areas where we are focusing on increasing our market positioning, like for our retina, diabetes and COPD respiratory portfolio, as well as our two new product launches in chronic heart failure and dermatology in the past 12 months.” To further complement their portfolio, they are also looking to build local partnerships to complement their own portfolio. She suggests, this is another way “to increase our presence in the company” through incorporating products that have “synergies ... not necessarily in pharma but also in diagnostics testing and medical devices.”

CLINICAL TRIALS DESTINATION

Small markets must inevitably etch out a niche positioning for themselves, and for Hong Kong, its world-class



TWO DECADES OF CLINICAL RESEARCH EXCELLENCE OF HKU-CTC



HENRY YAU

managing director,
HKU-CTC

The University of Hong Kong Clinical Trials Centre (HKU-CTC) is going to celebrate its 20th anniversary. Its successful development to become the largest clinical trials center in Hong Kong today offers an inspiring blueprint for how Hong Kong, as Asia's world city, can develop a sterling reputation as an international clinical research hub.

Henry Yau, managing director, charts, "from a tiny team of only four people in 1998, we have since grown to a fully-fledged organization with over 50 full-time employees acting as a one-stop center for facilitating all kinds of clinical trials", adding that "so far we have facilitated more than 1,200 clinical trials, many of which led to high-impact publications in international journals or contributed to the launch of new treatments or healthcare strategies."

Throughout the two decades, HKU-CTC has worked to amass a stunning body of expertise and knowledge per-

taining to all areas relevant to the management of clinical trials – with professional capabilities in Site Management Organization (SMO) services, Contract Research Organization (CRO) services, Phase 1 Centre operations, and professional training. Its Phase 1 Centre is fully capable of undertaking various types of phase 1 and clinical pharmacology trials – whether in patients or healthy volunteers.

HKU-CTC's development is so advanced and sought-after that it has also taken the initiative to develop PRAC-TISE®, a novel training program offered in Asia, Middle East and North Africa, focusing on Good Clinical Practice (GCP) and clinical study operation. This expertise sharing also occurs at a global level. Yau highlights, "we are glad to establish the International Clinical Trial Center Network (ICN) together with other top-tier clinical trials centers such as those under Harvard University, University of Cambridge, University of Zurich and Kyoto University."

"HKU-CTC will undoubtedly continue to develop and support Hong Kong as the best city for clinical research in the region," Yau concludes.

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JULIANA CHAN

executive director,
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LOUISA TSANG

managing director,
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medical infrastructure, world-renowned academics and clinicians as well as high population density make it a strong contender in clinical research. One of Hong Kong's strongest advantages when it comes to clinical research is the fact that the two main clinical trials centers, the Clinical Research Management Office at the Chinese University of Hong Kong (CUHK CRMO) and the Clinical Trials Center at the University of Hong Kong (HKU-CTC), have Chinese FDA accreditation, meaning that their clinical trials data can be used for the registration process in mainland China. This is why global pharma companies choose Hong Kong to conduct a significant amount of trials, like Roche, who does around 28 to 30 clinical trials across all stages in Hong

Kong every year, and AstraZeneca, which has around five ongoing global clinical trials and five ongoing externally-sponsored research programs in Hong Kong at the moment, "testament both to the strength of the clinical research environment here and the high regard our global organization has for Hong Kong. AstraZeneca is ... embedded in Hong Kong's healthcare and medical environment and ... vice versa: Hong Kong is an important piece of our global R&D landscape", Curley stresses.

As Professor Juliana Chan, Executive Director at CRMO CUHK and a leading global diabetes expert, summarizes, "Hong Kong is an excellent test-bed and we have a special role to play in the drug development cycle. The density of the ecosystem and the support of all relevant stakeholders enable us to come up with ideas, answers and innovations in a very short time frame. Once an idea has been tested successfully in Hong Kong, it is easier to roll it out in other markets. We must not forget that we are also a part of China – and the China market is gargantuan. Hong Kong is a place where both discovery and application happen."

Most leading clinicians in Hong Kong would have spent at least part of their education and career

abroad, developing not only a keen awareness of the particularities of global disease patterns but also an extensive professional network. Chan highlights her own background: "I was born and raised in Hong Kong but studied and trained in the UK. When I came back, I noticed that people with diabetes in Asia exhibit slightly different patterns than patients with diabetes in Europe: they are more prone to certain complications, tend to be younger and have a higher incidence of kidney disease. I set up a couple of clinical trials with leading pharma companies, they saw firsthand the high clinical standards and speedy patient recruitments in Hong Kong, and subsequently set up big research programs targeting niche areas!"

As the largest clinical trial center in Hong Kong, the University of Hong Kong Clinical Trials Center (HKU-CTC), is at the core of Hong Kong's clinical research proposition. "We conduct all sorts of clinical studies in terms of clinical trial phases and disease areas but in line with international trends, we have seen a surge in the number of oncology, cardiology and hepatology clinical trials. Since the setting up of our Phase 1 Center in 2014, we are now starting to conduct more and more phase 1 and clinical pharmacology trials, especially in the most popular areas like cancers, hepatitis, cardiovascular and immunological diseases. We expect this trend to continue.

Yau showcases a current investigator-initiated study: "we are now helping a research team to run a drug trial involving over 10 centers across seven countries in Asia. This sort of complex projects used to be very challenging because investigators may not have the full management expertise or enough capacity to implement all required tasks such as contractual negotiations, quality management, data management, and statistical analysis and reporting. With HKU-CTC's support, now this becomes possible. Henry Yau, managing director and honorary assistant professor, says.

Managing Director at CRMO CUHK Louisa Tsang elaborates: "Pharma companies assess sites for clinical trials based on speed, quality and the availability of qualified persons. To be competitive against more established environment, we need to guarantee the highest standards relating to patient safety and patient care."

Even within clinical research, Hong Kong has a particular affinity for early-stage clinical trials. Tsang

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SIAN NG
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explains, “The trend is that pharma companies allocate early-phase studies to external partners, and then continue to work with the same partners if the results and experience prove to be good. For that reason, it is important to get in early, not just for CUHK but Hong Kong as a whole! Having more early-phase studies coming in would increase the number of late-phase studies as well, and also mean that Hong Kong doctors will already be familiar with innovative drugs by the time they are available on the market.”



RONALD LI
executive director, Ming
Wai Lau Center for
Reparative Medicine

“ HONG KONG HAS BEEN A TRADING PORT FOR CENTURIES, AND THIS IS SOMETHING IT CAN CONTINUE TO LEVERAGE IN THE SCIENCE AND TECHNOLOGY FIELDS.

RONALD LI MING WAI LAU CENTER FOR REPARATIVE MEDICINE

Dr. Sian Ng from Novartis Oncology concurs: “It was recognized that, as a small city, it would be harder for Hong Kong to run late-stage clinical studies that would require the recruitment of hundreds of patients as well as frontline staff. Early-phase clinical studies would be a better fit for Hong Kong as we also boast high-quality laboratory facilities and staff.”

As a company, Novartis is rather unique in being active to conduct phase I trials outside of the US and Europe, she adds, so it was “a very good fit”. Furthermore, “Hong Kong is fortunate to have many excellent, world-class investigators. For instance, recently, Associate Professor Stephen Chan Lam was able to bring a first-in-human study to Hong Kong, which is a huge achievement, as Novartis typically only conducts such complex studies in the US.”

Hong Kong’s research potential is not only limited to clinical trials, however. Its privileged position on the border between China and the international community gives it a unique value proposition to contribute to the global research ecosystem. This was a principal motivation behind the decision of Karolinska Institute (KI) to select Hong Kong as the location for

its first international branch in over two centuries of academic and research excellence, the Ming Wai Lau Center for Reparative Medicine. Executive Director Dr. Ronald Li articulates the overarching mission, which is to “position the Center as an embassy of sorts to connect firstly, Sweden and Hong Kong (as a part of China), and then through that, to contribute to building partnerships between China, the EU and North America via our vast networks so as to facilitate R&D, commercialization and innovation, and translation for the public community to benefit.” After all, historically, “Hong Kong has been a trading port for centuries, and this is something Hong Kong can continue to leverage in the science and technology fields. We see investing in Hong Kong as a starting point – because we have the international standards and systems that

the international community is more familiar with. This is exactly how we would like to position the Center as an embassy, to link Hong Kong, China and Asia to the rest of the world.”

Despite Hong Kong’s robust academic research tradition, Li admits that this model of a dedicated research institute outside of universities, with a strong focus on downstream commercialization of innovation, is “a first for Hong Kong” whereas other countries in the region – notably Singapore – have advanced significantly “when it comes to the downstream development and commercialization of upstream research”. This is why another task for Li is to “adapt this international research institute model to the Hong Kong context and needs.”

TAKING ADVANTAGE OF THE MAINLAND CHINA MARKET

With China’s mammoth market on their doorstep, local companies would be foolish not to take

advantage of mainland China's burgeoning wealth, persistent unmet medical needs and socio-cultural synergies. The winning formula seems to be using Hong Kong as a starting base to build up expertise and R&D technology before leveraging on the Chinese hinterland's manufacturing muscle, low cost base and voracious market appetite.

As founder and CEO Dr. Benjamin Li of Lee's Pharmaceuticals, a fully integrated biopharma elaborates, "It was naturally a challenge for us at the beginning to build a fully-integrated pharma company and to develop our own in-house R&D and manufacturing capabilities rather than remaining a sales, marketing and distribution arm but we also see it as a great opportunity."

“

WE WANT CHINESE DOCTORS AND PATIENTS TO HAVE MORE, BETTER AND SAFER OPTIONS.

BENJAMIN LI LEE'S PHARMACEUTICALS

Lee's Pharm was set up in response to the unmet medical need they saw in China. Li edifies, "for instance, in critical care, we have licensed a neonatal product [based on nitrous oxide gas] for premature babies that develop respiratory failure and pulmonary hypertension ... in the US and Europe, hospitals have access to pharmaceutical-grade nitrous oxide but this is still not the case uniformly in China. Some hospitals were still using industrial-grade nitrous oxide, which is less pure and less safe, so this is why we have introduced our pharma products into China. We want Chinese doctors and patients to have more, better and safer options."

He cites as an example, "Most recently, we announced the acquisition of the rights to manufacture and distribute a neonatal surfactant product approved in the US for the treatment of premature babies with underdeveloped lungs. The conventional products used internationally and in China were mainly animal-derived but the product we acquired is a synthetic peptide-containing surfactant. Around 16 to 20 million babies are born each year in China, so there is a correspondingly high premature baby count; this also represents another true unmet medical need."

He adds, "Our business model is a little unique because we not only conduct our own R&D in-house but we are also very aggressive

in licensing new technology and products through working partnerships. In particular, we have many partnerships with companies from Europe, the US and Japan to bring their technology into mainland China. We are able to localize the production and development as well because we have invested significantly in our manufacturing and research capabilities in the past few years. This is why Lee's Pharm would be a good partner for companies interested in doing business in China."

Another success story is Hyribio, established by a family-based investment group seeking to diversify its resources after the 1997



BENJAMIN LI
founder and CEO,
Lee's Pharmaceuticals



TOM KUN
director and deputy
GM, Hyribio

Asian financial crisis. Obtaining their IVD platform technology from the University of Hong Kong (HKU), they nevertheless partnered with some of the most prestigious organizations in China and today, Tom Kun, Director and Deputy GM says, "Twenty years on, we have developed into a leading provider of IVD assays with a fully integrated operation chain from R&D, manufacturing, sales and marketing to after-sales technical support service", becoming "one of the largest molecular diagnostic companies in China. We employ over 800 people with two GMP facilities and 25 regional offices, providing products and services to over 1,200 hospitals and medical institutes in China alone."

The paramount criterion for success was their understanding of the mainland Chinese market – and its unmet market needs. Hyribio's flagship products target human papillomavirus (HPV), a distinctive prerequisite for cervical cancer – which, as Kun stresses, "is the second most common cancer in China. Out of the roughly 500,000 new cases in the world, around half comes from China. The global death rate is between 120,000 to 200,000 and again, around half of



WILLIAM LAI
CEO, Fortune
Pharmacal

these cases are in China.” HybriBio was the first to offer a full genotyping test to the Chinese market, meaning that “Chinese KOLs, doctors and government officials were very eager to listen to our pitch and consider our product. This allowed us to punch well above our weight, which would not have happened if we had selected a much more common disease like Hepatitis B”, Kun affirms. Over 16 million such tests

have since been sold in China since 2016 and the stellar track record extends globally, with over 25 countries from Asia-Pacific, Middle East, Europe, Africa and South America, using HybriBio’s products for national screening, clinical and research purposes.

Hong Kong pharma companies also have an ace up their sleeve: the ‘Made in Hong Kong’ brand, as local household name Fortune Pharmacal can attest to. The mainland China market represents “a big chunk” of their business and CEO William Lai reveals that “first and foremost, we are a Hong Kong company and we will always be ... This ‘Made in Hong Kong’ brand works really well in China ... contributing to a premium image and helping to justify premium product pricing.”

Founded in 1953 by Lai’s father, the company has seen rapid expansion from a single-product company working in a workshop with a handful of employees to a recognized brand with 25 products on the international market today. Nevertheless, Fortune has maintained its investment focus locally despite the fact that Hong Kong has one of the highest pharmaceutical manufacturing costs in the world – and not for reasons of sentiment. Lai admits, “looking at the price ratio, land and construction of the factory itself would be slightly less expensive in China” but stresses that once other factors like machinery, import duties, technical know-how and workforce quality are included, the playing field is more than levelled – and Hong Kong may even be more competitive than the mainland. For instance “sustaining a workforce in China is a challenge, which can jeopardize the production process. Furthermore, Hong Kong is within reach to suppliers globally so it is easier to establish strong business connections.”

While Fortune Pharmacal’s decision may be rather atypical of industries in Hong Kong, where most

manufacturing has fled for the mainland, there is no doubt that it is the right one. This is why Lai recently decided to invest in a new facility that will increase their space by four times and their production capacity by five times – as well as making the company the only Hong Kong manufacturer with a full R&D department. Lai supplements, this means that “all the preliminary tests prior to production will come from R&D ... making sure that even the finest details of the manufacturing process are controlled. [Having these] R&D and scale-up facilities will give us an advantage over any other competitor in Hong Kong or China.”

GAZING AHEAD

For Professor Dennis Lo, director of the Li Ka Shing Institute of Health Sciences at CUHK and one of Hong Kong’s most celebrated academic-entrepreneur, recognized globally for his pioneering work in non-invasive prenatal diagnosis, the path is glaringly obvious: “[Hong Kong] needs more success stories. Our strength is our people. We need more people who are academics, scientists, engineers and entrepreneurs to start our own companies and make a name for ourselves.”



**OUR STRENGTH IS OUR PEOPLE.
WE NEED MORE PEOPLE WHO ARE
ACADEMICS, SCIENTISTS, ENGINEERS
AND ENTREPRENEURS TO START OUR
OWN COMPANIES AND MAKE A NAME
FOR OURSELVES.**

PROF. DENNIS LO CUHK

With “Together, Progress, and Opportunity” as the tagline of its 20th anniversary celebration, Hong Kong seems poised to enter a new era of prosperity in the life sciences innovation and technology sphere by leveraging on its unique positioning as an East-West super-connector – but with such fierce competition, clear and decisive action still needs to be taken to determine what really differentiates Hong Kong and to realize its latent potential. 🌟



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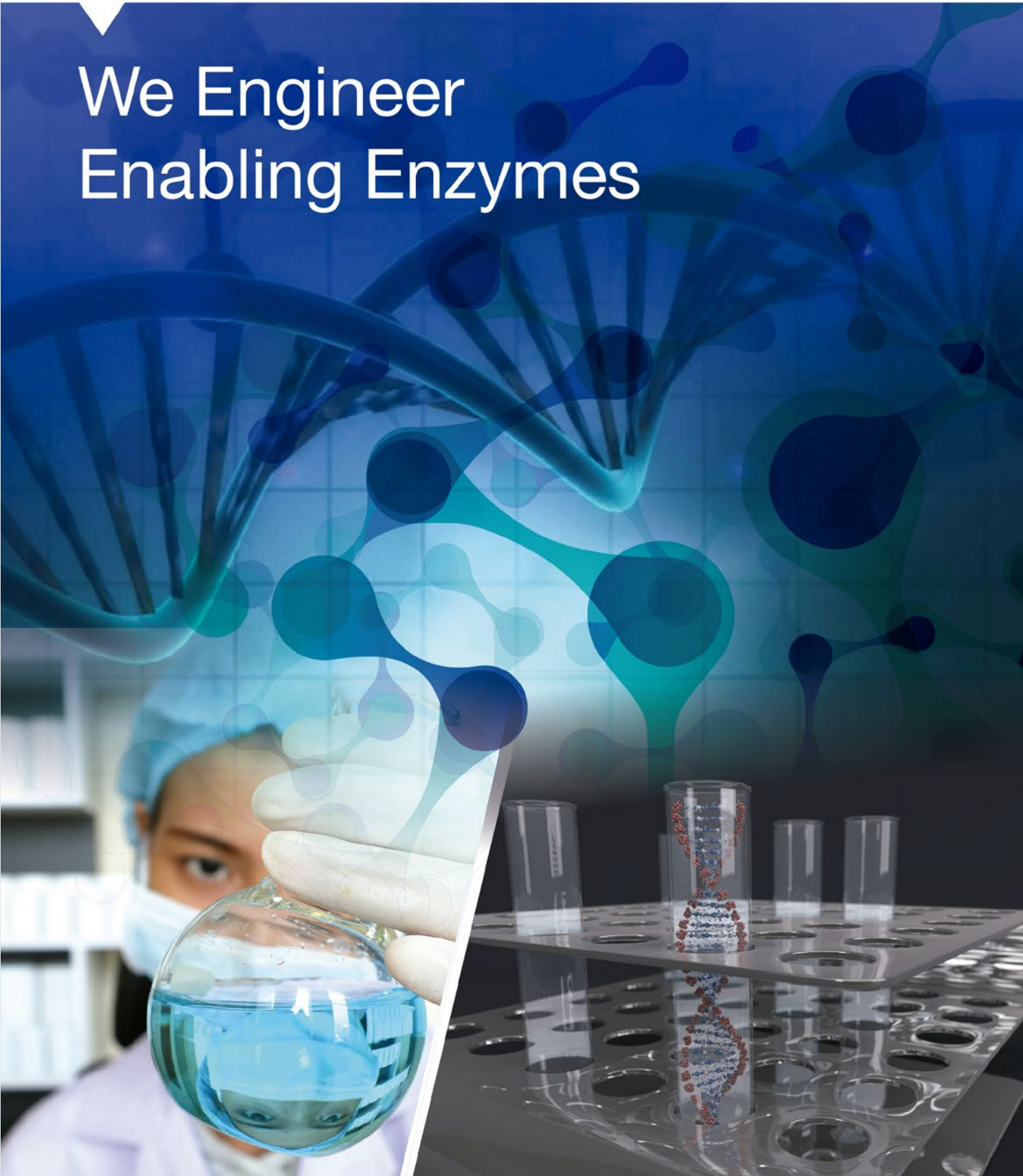
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GIVING HOPE A HAND

Michael Tsui, founder and CEO of Rehab Robotics, an innovative Hong Kong start-up with a game-changing invention for stroke neuromuscular rehabilitation, talks about the story behind his award-winning 'Hand of Hope' technology



Michael Tsui
REHAB ROBOTICS

HCLS: Michael, can you tell us more about your flagship product, the 'Hand of Hope' technology for upper limb stroke rehabilitation?

MICHAEL TSUI (MT): Rehab Robotics was founded on the principle of neuroplasticity, a well-publicized theory about the brain's ability to reorganize itself by forming new neural connections throughout life ... allowing neurons in the brain to compensate for injury and disease by adjusting their activities in response to new situations or environmental changes.

A stroke is one of the leading causes of adult disability globally and hand rehabilitation after a stroke is a very challenging aspect of recovery. The 'Hand of Hope' is a therapy device used for neuromuscular rehabilitation of the hand and forearm. It aims to help stroke patients regain hand mobility through motor relearning through a biofeedback system where surface electromyography (sEMG) sensors use a patient's own muscle signals to active their desire to move their hand. A robot, after all, will never tire!

There are two basic elements. The first is that patients need to actively participate in the process.

The second is that there needs to be a lot of repetition. With both elements, neuroplasticity and the recovery of lost functions can be encouraged.

HCLS: How has the company developed in the past seven years?

MT: Firstly, we are very proud that this was the first product from a Hong Kong company to win the Grand Prix award at Inventions Geneva in 2012, a testament to the quality of our innovation.

To date, we have sold around 50 units, with a third of that in Hong Kong and China, and the others both in neighboring countries like Singapore, Taiwan and Malaysia, as well as in more far-flung places like Greece, Ukraine, Germany and Russia. Our distribution is therefore very international.

Two months ago, we also launched a rental program where patients can lease a 'Hand of Hope' unit for a period of four months. Instead of having a session once or twice weekly, they can do it twice a day, which greatly speeds up the recovery process. This also eliminates the hassle of travelling to rehab centers, which are typically not located in very accessible locations.

Another business idea is to open a dedicated 'Hand of Hope' rehab clinic. I have begun to work on a business plan but managing a clinic is another business altogether so we will need to consider this very carefully.

Rehab Robotics is always open to partnering with like-minded companies and individuals that share our passion of helping stroke survivors live better lives. 🌟



ADVOCATING FOR HONG KONG

Hong Kong's small population size and proximity to some of the largest pharma markets in the world, like China and Japan, can mean that local affiliates of large pharma companies can find themselves overshadowed by their heftier cousins. Couple this with a mature market, sophisticated healthcare system and the financial constraints of a rapidly aging population, general managers face the daunting tasks of not only promoting operational excellence but taking on the task of advocating for the Hong Kong affiliate within the global organization.

As general manager of AstraZeneca Hong Kong, Scott Curley, astutely puts it, "Realistically, if Hong Kong was just a small market with average performance, no one would be interested in us. As soon as we raise our profile and demonstrate that we can punch above our weight to bring great value to the global organization, the global organization will want to invest even more in this affiliate, which will ultimately benefit patients and the overall community in Hong Kong." As a result, when he assumed his position in Hong Kong two years ago, he made it a paramount priority to push Hong Kong higher on the global agenda. He elaborates, "Hong Kong had initially been seen as a next-tier market as a result of its size but I quickly realized when I arrived that the public healthcare system – under the Hospital Authority – facilitates speedy regulatory approval of innovative new medicines. This means that you can launch new products in Hong Kong much earlier than in the rest of the region." He set the target to launch 10 new products within his three-year term – and today, after only 2.5 years, he can name nine successful product launches under his belt.

Indeed, it may be precisely the small size of Hong Kong that helps pharma companies position Hong Kong as a test bed for their global organizations.

"We are usually one of the first countries in the region to receive product registration. In oncology, we also have the flexibility of doing named-patient imports, so we can bring in specific products for a local unmet need once it is registered in an advanced country like the US. This also allows us to share real clinical experience of new drugs to other markets," lauds Sian Ng, Head of Oncology for Novartis, adding that "credit should also go to the Department of Health" for their efficiency and willingness to collaborate with industry on market access. Dorine Leung, general manager and country vice-president for Novartis Pharma, adds, "one advantage is that Hong Kong is very small so it is possible for me to communicate directly with my team. In mainland China, for instance, this would be difficult as the affiliate sizes are so big that you have to rely on communication channels. Communication is important when it comes to such major changes, and in particular, direct communication from the leader instead of more impersonal methods like email or memos."

General manager (Taiwan, Hong Kong and Macau) for Merck Alexandre de Mulrat reiterates these sentiments. "Looking at our performance, although we did not have new products for a few years now, we have managed to deliver growth and outstanding profitability. This has managed to place Hong Kong in the sights of senior management." Furthermore, he points out the advantage of Hong Kong's proximity to mainland China: "we also capture some of the important mainland China market when it comes to medical tourism. You also have links between mainland Chinese and Hong Kong hospitals when it comes to recognition of clinical trials in Hong Kong by the Chinese FDA." His conclusion? "Hong Kong, if well-positioned and well-advocated, can attract the right kind of attention." ❄️

FIRST IMPRESSIONS

As one of the few non-locals leading a pharma affiliate in Hong Kong, Glaswegian Scott Curley, general manager of AstraZeneca, shares his first impressions of Hong Kong and the evolution of his leadership style over the past few years.

HCLS: Having previously worked in global product strategy roles, what were your first impressions of AstraZeneca Hong Kong when you arrived in February 2015?

SCOTT CURLEY (SC): My transition has been facilitated by the great welcome given to me by the team here. Hong Kong is an incredible country to live in with probably one of the best working environments for foreigners. As a Scot, given Hong Kong's historical associations with the UK, there was a surprising amount of cultural similarities. The largest shock I have had to deal with would be the humidity and heat.

In my last role working as Global Head of Commercial and Marketing Operations for Brilinta™, my mandate had been to think very strategically about the brand's global performance with Global Portfolio and Product Strategy (GPPS) oversight. Coming to Hong Kong as general manager, my thinking had to become much more operational as I had to execute and deliver the global strategy in the local context with demonstrable results.

HCLS: As general manager, you also have a leadership mandate for the affiliate. Have you had to adapt your leadership style since coming to Hong Kong?

SC: First and foremost, it was not about coming here as the boss to tell people what to do. That approach does not work. When it comes to my leadership style, I focus on things like leading by example and bringing fresh perspectives. The global perspective I have from my previous positions gives me an advantage when it comes to managing a country affiliate.

I am not here to oversee the status quo; my job is to drive improvement and empower change from within to enable the organization and its people here to grow to become better equipped to compete so HK will be a 'fit for the future' biomedical company that AstraZeneca aspires to be.

I also need to be really open to listening, learning and understanding. A great cultural difference I found coming to Hong Kong was this concept of 'saving face'. I found European management style to be more of calling people out directly to address issues head-on and avoid potential conflict later. I wanted people to feel comfortable to challenge or be challenged to foster a collaborative and open work environment. However, I learned that is not how business is conducted in Hong Kong and I had to learn to adapt my style and be subtler in my approach. The focus became more constructive and supportive instead of directly challenging.

I certainly do not know all the answers but together as a team, I am confident we can make AstraZeneca HK an even greater company and make a meaningful difference to patients' lives, which is our driving ambition. ❄️



**SCOTT CURLEY, GENERAL MANAGER,
ASTRAZENECA**



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THE BEST OF BOTH WORLDS

Professor Christopher Cheng, managing director of the Hong Kong Institute of Biotechnology (HKIB), the first biotech organization established in Hong Kong, shares the Institute's experience in developing the essential infrastructure for the local development of biotech and Chinese medicine.



Prof. Christopher Cheng
HKIB

HCLS: Professor Cheng, what is the mandate of the Hong Kong Institute of Biotechnology (HKIB)?

CHRISTOPHER CHENG (CC): Our mission statement was – and continues to be – to provide the catalyst and the essential infrastructure for the development of biotechnology and Chinese medicine industries in Hong Kong. The intention is to channel R&D, from CUHK as well as other institutions in Hong Kong, into industry by facilitating product development and commercialization. Since this is a lengthy process, and as a small institute we cannot do everything so we are more focused on a small number of areas: process development, production formulation and quality control (QC) – areas not traditionally overseen by the universities. We are therefore filling this mid- to downstream gap in product development.

The two key priorities for us now are GMP TCM production and the conduct of clinical trials. We have been very supportive of GMP development in Hong Kong. 2017 is the year the generics drug industry in Hong Kong has achieved PICS GMP standards and we are proud to have supported this through the provision of training courses. It is notable because we are the only public GMP TCM facility in Hong Kong so we can serve the needs of both local industry as well as

academia. With the latter, we are crucial in the provision of GMP-certified materials for researchers looking to conduct TCM clinical trials. For this reason, we are now in the process of expanding our existing TCM GMP facility and recently, we received funding of over HKD 30 million – jointly from ITC and the Jockey Club – for this purpose.

HCLS: Traditional Chinese medicine (TCM) is a rather niche sector in the healthcare industry. Can you shed some light on the convergence between Western and Chinese medicines?

CC: There are four principal components when it comes to the integration of Western and Chinese medicines. The first is to put herbal medicine on an evidence-based approach. Secondly, it is to identify the active ingredients used in TCM, which requires a lot of translational research. Thirdly, it is with the conduct of clinical trials for TCM, which is well-suited to Hong Kong because we have a high-quality and reputable clinical trials environment. Finally, it is GMP TCM production.





This is something I am pushing for: today, there are over 10 GMP TCM facilities but HKIB was the first and continues to be the only public facility offering GMP TCM manufacturing services.

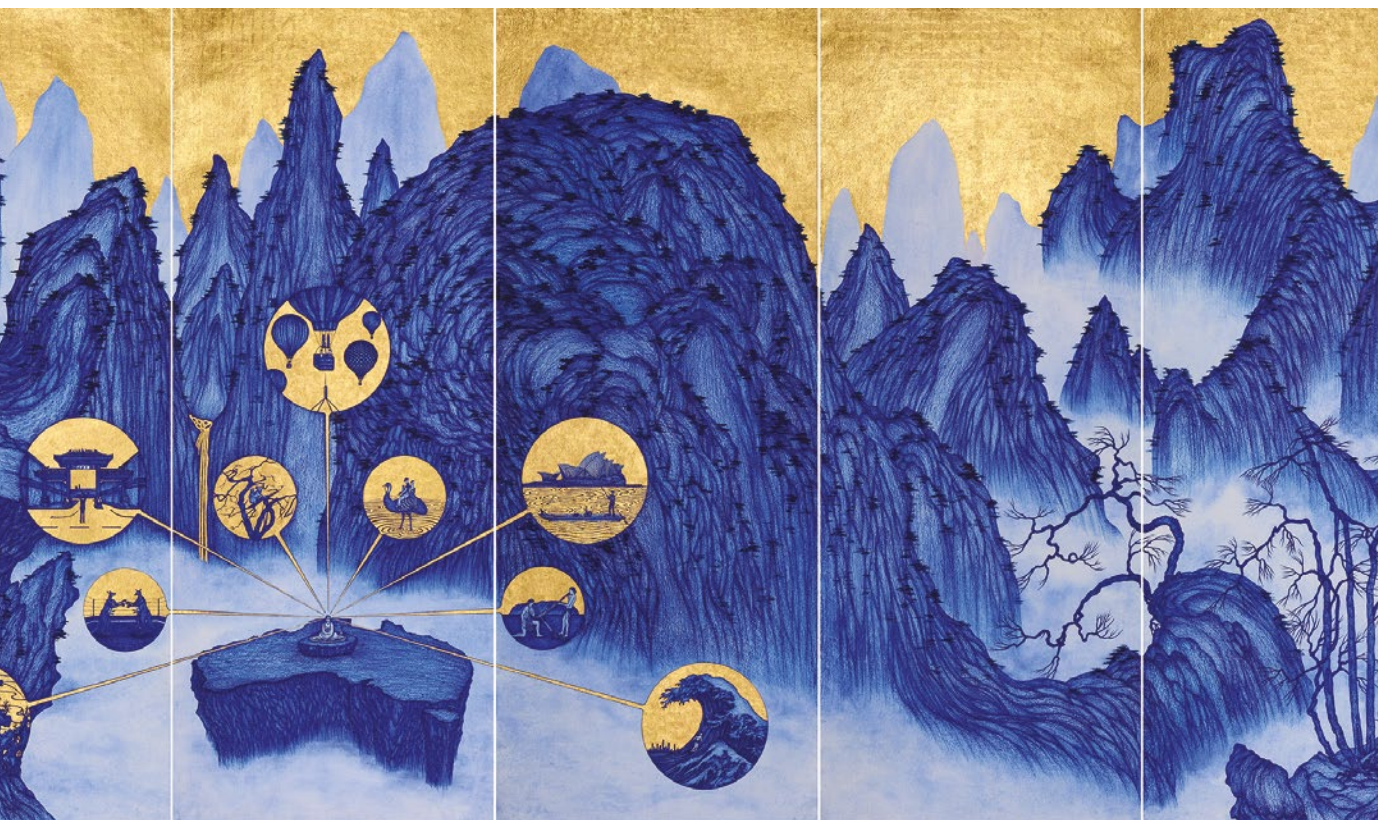
HCLS: What makes the development of TCM particularly relevant for Hong Kong?

CC: For local development, I strongly believe that you have to look at the relative strengths of each region. For an industry to be commercially viable and sustainable, it needs to be based on something already established and rooted in its own ecosystem. TCM is an example of an indigenous industry rooted in Hong Kong that could generate significant returns on investment. Many people are either directly or indirectly employed by the TCM industry along the entire value chain, so its commercial viability has already been proven.

Hong Kong has one of the best healthcare systems in the world. It is very systematic and the mainstream healthcare practitioners are well trained in Western medicine. All medical documents in

the hospital system in Hong Kong are in English and conform to the standards of Western medical practice. At the same time, we have close connections with mainland China and an affinity for TCM, which is also very well-established in Hong Kong. There are three schools of Chinese medicine in Hong Kong at the Chinese University of Hong Kong (CUHK), the University of Hong Kong (HKU) and Hong Kong Baptist University (HKBU).

The fact is that there are certain limits in Western medicine and the Institute is exploring the possibilities of integrated medicine to see if some areas of Chinese medicine can supplement Western medical practice – safely and ethically, of course. As a result of the established Western medical practices, Hong Kong can play a role in fostering convergence between Western medicine and TCM because we understand the need to bring an evidence-based approach to TCM. Hong Kong sits at the heart of East and West so I believe it is the best place to put Chinese medicine on an evidence-based approach. ❄️





A ROAD MAP INTO CHINA

From a local Hong Kong start-up, HybriBio has grown today into one of the largest molecular diagnostics companies in mainland China, with their flagship product, human papillomavirus (HPV) genotyping test, having sold over 16 million tests on the mainland since 2016.

Tom T. S. Kun, director and deputy general manager, HybriBio, reveals the masterplan behind the company's growth. He explains, "first and foremost, the financial stability our parent company could provide from the earliest stages was critical. The question for most, if not all start-ups, at the beginning is, how long can your company even survive?"

While that may be a prerequisite for a biotech start-up's survival, it does not guarantee growth. Kun continues, "next was choosing the right platform and then the right product. Many companies may have good platforms but choose the wrong products in terms of market demand." HybriBio chose HPV as their primary penetration point because it was a relatively unmet market need at the time – as opposed to, say, Hepatitis B, for which there were already many quality tests available. As the most distinctive prerequisite for cervical cancer – the second most common cancer in China – the company believed that this was the winning strategy. HPV testing relies exclusively on molecular biology techniques using nucleic acid probes. As a result, HybriBio licensed a flowthrough hybridization platform technology that the University of Hong Kong (HKU) had developed that allows them to probe their interested target DNA sequence by forcing it through a nitrous oxide membrane.

Kun illustrates, "I like to use the analogy of a bath versus a shower – a shower is faster and much more effective. We shortened the time from 8 hours to 10 minutes!" The cherry on top was that the dominant product at that time was a high-risk 'yes-or-no' test that could not determine whether a patient had one or more genotypes, or a single or multiple infections. While this may be sufficient for screening purposes, in the clinical setting it was lacking because cervical cancer is more likely to be caused by continuous infection with the same HPV strain over an extended strain.

For Kun, the path to success is clear: "the key is to understand market needs". 🌱



TOM T. S. KUN
director and
deputy general
manager, HybriBio

HCLS: Given HybriBio's track record for pinpointing the needs of the mainland Chinese market, what further opportunities do you see?

TOM T. S. KUN: In order to better serve our community, we have decided to establish a network of our own clinical laboratories covering all major cities in China. We already have 16 CFDA-approved sites across China, including in Hong Kong, Beijing, Shanghai and Guangzhou, with three more under renovation and awaiting approval. By the end of this year, I expect we will have 18 approved sites in total, which would rank us as the fourth-largest operator of private clinical labs in China in terms of lab numbers.

Firstly, it is a market with immense growth potential in China as the government is trying to relieve the pressure on the public hospitals by decentralizing service provision. Currently, out of the 20,000-plus hospitals in China, only around 2,000 have proper PCR facilities. Having our own labs would also help speed up our own R&D rate in terms of the number of samples we can process. It would also consolidate our presence in the larger healthcare space. For instance, in the future, if we decide to branch out into establishing our own health check centers and clinics, these labs can help us make that leap. We are currently already providing many oncology testing services for major companies, catering not only to the Hong Kong market but the entire region. Hong Kong is a good base to establish such operations as the regulatory framework is more permissive, allowing new products to be tested.

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