Kim Ribbink

SINGAPORE a Pharma Hub for Asia

The pharma industry is increasingly drawn to Singapore, thanks to its commitment to research and innovation, good talent base, and trusted regulatory and IP environment.

Singapore is fast becoming a leading regional and even global center for the life-sciences industry. According to Datamonitor, Singapore was the third-fastest growing nation globally in the export of pharmaceutical goods from 2000 to 2010.

With a population of just 5.3 million, Singapore is itself a small healthcare market, but as one of the most developed countries in Asia it is the regional headquarters of a number of global pharmaceutical companies, says Vince Grillo, Ph.D., general manager, Kantar Health Singapore and Malaysia.

Yet in terms of healthcare spending, Singapore spent just 1.4% of its GDP on government health expenditure in 2012.

"What distinguishes Singapore as a pharmaceutical market is its global attractiveness across manufacturing, regional and global hubs, R&D, and biotechnology," says Rohit Sahgal, regional managing director, Ogilvy CommonHealth Asia Pacific, part of Ogilvy CommonHealth Worldwide.

Pharma: A Key Industry

The pharmaceutical industry is an important sector for Singapore's economy, Dr. Grillo says. In 2013, the Ministry of Trade and Industry identified pharmaceuticals as one of the high-value industries that will provide growth for Singapore's economy over the next few years.

The government has committed S$16.1 billion (US$12.7 billion) for research, innovation, and enterprise activities between 2011 and 2015, Dr. Grillo says.

According to Singapore's Economic Development Board (EDB), pharmaceutical manufacturing output grew to S$23.9 billion in 2012, a 10.2% increase over the year before, while employment grew to more than 5,700.

Kevin Lai, director of biomedical sciences and consumer businesses at the Singapore EDB, says pharma manufacturing contributed more than 85% of the total biomedical sciences manufacturing output and 4.6% of Singapore's GDP in 2012.

Indeed, many top biopharma companies have chosen Singapore as their manufacturing base, and several have established centers for biologics manufacturing in Singapore.

In recent years, eight pharmaceutical companies and 25 medical technology companies have begun manufacturing in Singapore, including two recent investments by Novartis and Amgen, US$500 million and US$200 million respectively, Mr. Lai says.

"Collectively, these biologics plants represent about S$2.4 billion in total investments and employ 1,700 people," he says.

Ames Gross, president of Pacific Bridge Medical, an Asian medical consulting company, says companies are attracted by a favorable regulatory environment combined with the Singaporean government's commitment to growing its biomedical industry.

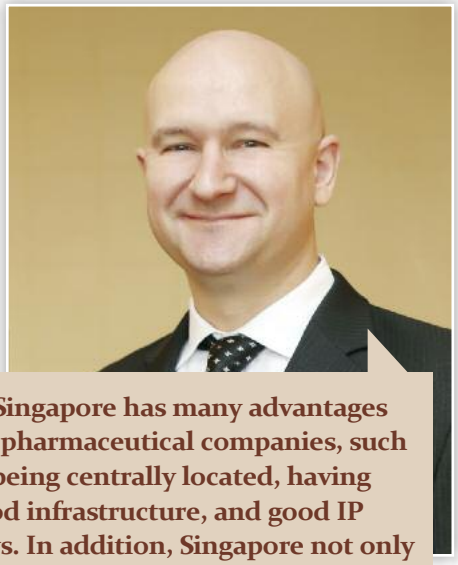
"Currently there are more than 65 different companies actively conducting biomedical R&D in Singapore," Mr. Gross says. "Singapore gives companies access to multi-disciplinary capabilities in a single location. Additionally, the Singaporean government has invested in building its biomedical research industry and is the home to a number of research institutes and research consortia in key fields, such as clinical sciences, bioengineering, molecular/cell biology, genomics, bio-imaging, and immunology."

According to Simon McErlane, MBBS, VP, head of Takeda Development Centre Asia, Singapore offers numerous advantages to a pharmaceutical company, including good infrastructure, a multi-ethnic population, strong intellectual property laws and enforcement, access to talent, political stability, and a pro-business and pro-science environment.

Takeda has established several entities in Singapore: Takeda Development Centre Asia Pte Ltd; Takeda Pharmaceuticals (Asia Pacific) Pte Ltd; and Takeda Vaccines Pte Ltd. The Takeda Development Centre serves as an Asian regional hub for clinical development for metabolic and cardiovascular diseases, respiratory and immunology, central nervous system diseases, and other therapeutic areas, Dr. McErlane says. Takeda Pharmaceuticals is responsible for the strategic and commercial operations with the local management teams in Australia, Thailand, Philippines, Indonesia, India, Malaysia, and Singapore.

"Takeda Vaccines conducts research and development activities for live and inactivated viral vaccines, including analytics and proof-of-concept studies," Dr. McErlane says. "Current R&D efforts are focused on Dengue fever and enterovirus-71, an important cause of hand, foot and mouth disease."

Singapore offers the added advantage of a



> **"Singapore has many advantages for pharmaceutical companies, such as being centrally located, having good infrastructure, and good IP laws. In addition, Singapore not only has talent available but is also a country where talent would not hesitate to move to."**
>
> **DR. SIMON MCERLANE**
> Takeda Development Centre Asia

public partnership model through entities such as The Health Sciences Authority (HSA), which in addition to organizing scientific meetings and symposia seeks to facilitate discussions on cutting-edge issues in regulatory science, Mr. Sahgal says.

The R&D Environment

Singapore's tightly integrated innovation ecosystem makes it easy for companies to collaborate with R&D partners, Mr. Lai says. This network includes universities, public-private partnerships, and other companies.

"In fact, the Singapore Biomedical Sciences Industry Partnership Office exists primarily to help companies working in Singapore find the kinds of collaboration partners they need to succeed." Mr. Lai says.

R&D in Singapore is keenly focused on high net value research and development into discovery, preclinical, and clinical development of drugs to proof of concept says Associate Professor Boon Cher Goh, MBBS, CSI deputy director and head of the Experimental Therapeutics Program at the National University Health System (NUHS) of Singapore.

"This is evidenced by the investment in the Experimental Therapeutics Centre and in Investigational Medicine Units and Phase I units at NUHS, SingHealth, and the Singapore Clinical Research Institute," he says.

The Experimental Therapeutics Centre was set up by the Singapore government through the Agency for Science, Technology and Research, to advance and accelerate drug discovery in the island nation. SingHealth is an academic healthcare cluster.

Dr. Goh says many pharma companies have brought their early-phase drug development programs into Singapore, especially in oncology and infectious disease areas.

"Singapore has been able to conduct such studies with rapid turnaround, fast patient accrual, and experienced investigators to provide key opinion on the direction of development," he says. "It is envisaged that with scientific experts in immunology and cellular therapy, clinical trials involving these strategies are being developed and will soon be open for accrual."

Further, companies are increasingly focused on the unique health needs of Asian populations, Mr. Lai says.

"To support this shift, Singapore created the Translational and Clinical Research flagship programs to collaborate with companies trying to better understand Asian diseases," he says.

The push to have more R&D in the country has also attracted international research organizations such as the American Association for Cancer Research, Duke University, and Johns Hopkins University, Dr. Grillo says.

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> **ROHIT SAHGAL**
> Ogilvy CommonHealth Asia Pacific

> "Many pharmaceutical companies have decided to bring their early-phase drug development programs into Singapore especially in oncology and infectious disease areas."
>
> **BOON GOH**
> NUHS

"We are seeing a remarkable breadth of cutting-edge technology coming out of healthcare institutions in Singapore, for example, advanced robotics for physical therapy and advanced neonatal ICU," he says.

Clinical Trials

An increase in the number of innovative early-phase trials has positioned Singapore as an R&D leader in Asia with more than 57 Phase 1 trials out of a total number of 250 trials (across Phase 1 to Phase 4) in 2012, Mr. Lai says.

Mr. Gross says Singapore has been building up its clinical research capabilities through a variety of initiatives. Among these is the Competitive Research Programme (CRP), which

supports R&D programs that help to identify strategic research where Singapore may want to invest and develop its own core capabilities for the future. Another initiative, the Health Services Research Competitive Research Grants (HSR-CRGs), a Ministry of Health (MOH) research grant, encourages HSR findings to be integrated into policy and practice. A third initiative, the Biopharmaceutical Manufacturers Advisory Council (BMAC) is made up of local pharmaceutical plant site directors and government agencies. Its purpose is to ensure that Singapore stays at the leading edge in research, development, manufacturing, and quality through the power of its workforce, and facilitates this by upgrading employee's skills, training new workers, and promoting best practices.

There has also been heavy investment in infrastructure to support clinical trials, particularly in translational research.

Investment has been made in Phase I/investigational clinical research for novel drugs and diagnostics targeted at Asian diseases as well as clinician scientists to test insightful clinical hypothesis, Mr. Lai says.

"Around S$175 million has been allocated for translational clinical research grants under the TCR Flagship Programme to draw together scientists and clinicians in a collaborative environment and S$80 million Clinical Trial Grant to support clinicians carrying out clinical trial studies for development of novel healthcare therapies," Mr. Lai says.

Another important clinical trial resource is the Singapore Clinical Institute, which focuses on later-stage trials, Mr. Gross says.

Patient Expectations

While the population of Singapore is small in size compared with neighboring countries, a high number of patients seek sophisticated technology in Singapore, including those from neighboring countries, Dr. Goh says.

"Patients from countries, including Malaysia, Indonesia, Vietnam, Brunei, Thailand, Mongolia, India, and even the Middle East travel to Singapore for serious or hard-to-treat conditions such as cancer, heart disease, and viral diseases," Dr. Grillo says.

He notes that for its size Singapore has an impressive number of hospitals. Ministry of Health figures show that as of 2012, there are a total of 10,756 hospital beds in 25 hospitals and specialty centers in Singapore.

However, Mr. Lai says the current healthcare delivery model in Asia is not sustainable due to the rising cost of managing chronic diseases, rapidly aging populations, and a shortage of skilled healthcare professionals, all of which is compounded by a burgeoning middle-class, and an ever-increasing demand for healthcare. In addition, the increasing disparities in healthcare infrastructure in Asia have been driving the need for a more equitable distribution in healthcare and infrastructure.

"Singapore's strong focus in disease biology research and integrated position with enabling technologies will allow companies to design studies that are more effective and allow them to derive more useful output from clinical trials."

KEVIN LAI
Singapore Economic Development Board

Singapore has responded to these challenges on several fronts, Mr. Lai says.

"Singapore's Ministry of Health has restructured the healthcare system toward an integrated care model to provide patients with holistic and integrated care," he says. "Singapore has six regional healthcare clusters, with each cluster anchored by a tertiary hospital supported by the primary and long-term care sector and support services to deliver patient-centric care."

Another initiative is the Health & Wellness Programme Office (HWPO) within the Ministry of Health, which seeks to bring together healthcare stakeholders and industry players to drive co-innovation and testing healthcare solutions that will address key challenges in the healthcare system.

The country is also emphasizing shared ownership and joint responsibility for healthcare outcomes as a core principle for the healthcare system.

"Philips' recent announcement of its APAC Hospital-to-Home (H2H) business unit in Singapore is an example of how the industry is evolving to help health systems in Asia to address the growing challenges linked to a fast growing and aging population," Mr. Lai says. "The H2H business aims to improve care transitions by offering re-admission management consulting, telehealth solutions for greater care continuity, and a health portal to engage patients and their families in their own health."

"The state of the Singapore pharma market exemplifies smart government strategy and flawless execution."

DR. VINCE GRILLO
Kantar Health Singapore and Malaysia

On the Market

Dr. Grillo says the HSA's process, which approves and regulates new drugs before they enter the local market, can be long, although it is transparent and allows pharma companies to check on the status of their applications.

"New drugs that are approved by HSA for launch take at least one year before they are put on the reimbursement list," he says. "This means that until a drug is reimbursed, patients have to pay out of pocket for these new drugs."

One challenge for companies is the fact that public hospitals in Singapore have private clinics that cater to local and overseas patients, who pay non-subsidized fees, Dr. Grillo says.

"This requires pharmaceutical companies to understand and develop distribution and pricing strategies in a private-within-public hospital setting," he says.

In terms of reaching patients, Singaporeans are well-informed, educated, and proactive when it comes to preventive disease, therefore being able to manage patient advocacy becomes a leverage point, Mr. Sahgal says.

He notes that Singapore has strict regulations when it comes to defining what is OTC, behind-the-counter, or prescribed medication.

"With such scheduled classifications, it is an interesting dynamic when it comes to providing patients with the right type of knowledge and empowerment to ask for the right drug/treatment," Mr. Sahgal says. "Branded DTC promotional activities are not permitted, and this is where disease awareness and education can take a partnership role in helping improve patient access. Public health events in partnership with the HSA are other ways that pharma companies can impart disease awareness messages as well as direct the public to clinics and healthcare professionals for further brand information." PV


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