

## Asia's synonym to Biocluster : Singapore

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As the newly appointed international director, Asia Pacific, Singapore Economic Development Board (SEDB), Mr Koh Jin Hoe, for the first time exclusively talks to BioSpectrum about the pharmabio industry and the transformation over the couple of years in Singapore.

### **How has the pharmabio industry in Singapore grown over the years?**

Koh Jin Hoe: At present, more than 30 of the world's leading biomedical sciences companies such as Pfizer, Merck Sharpe & Dohme, GlaxoSmithKline, Novartis and Takeda maintain a significant presence in Singapore, which speaks strongly of the sector's growth. The biomedical sciences (BMS) industry has rapidly grown to become the fourth pillar of Singapore's economy. Since 2000, BMS manufacturing output has increased by nearly five-fold from \$6 billion in 2000 to \$29.4 billion in 2012. Increasingly, companies are drawn to Singapore for our best-in-class manufacturing capabilities and to tap on a significant portion of the global supply chain that has shifted to Asia.

In less than five years, Singapore has become home to eight biologics manufacturing facilities, including two latest investments by Novartis and Amgen, amounting to \$500mil and \$200mil respectively. Singapore has committed S\$16.1 billion in continued support of research, innovation and enterprise activities between 2011 and 2015. Out of the S\$16.1 billion, S\$3.7 billion (23 percent) is allotted to enhancing the existing biomedical R&D infrastructure.

### **What kind of progress has been achieved in the field of clinical research in Singapore?**

Koh Jin Hoe: Singapore has made significant progress in translational and clinical research. We currently have three

Investigational Medicine Units dedicated for early-phase trials in public hospitals. The Singapore Clinical Research Institute, for example, focuses on supporting later-stage trials and bears the responsibility to develop Clinical Research Networks (CRN) in Asia-Pacific to support multi-site, multi-national clinical trials. These facilities will in turn support the growing community of clinician scientists in Singapore.

In term of translational research capabilities, Singapore is by far one of the most advanced nations in the region. We currently hold an excellent track record in conducting clinical trials at global standards and have a progressive regulatory agency. For this reason, we have seen an increase in the number of innovative early phase trials including first-in-man studies done in Singapore - positioning us as an R&D leader in Asia. Singapore has also established Clinical Trials Networks across the Asia-Pacific, including the Asia-Pacific Hepatocellular Carcinoma (AHCC) Trials Group, Family Medicine Research Network (FMRN), Pan-Asian Resuscitation Outcomes Study (PAROS) and so on.

### **What kinds of collaborations exist between Singapore research institutes and hospitals?**

Koh Jin Hoe: Over the past 20 years, Singapore has steadily built a strong foundation of basic and clinical research through its biomedical research institutes under the Agency for Science, Technology and Research (A\*STAR) and its universities including the National University of Singapore and Nanyang Technological University.

Examples of collaboration between research institutes and universities and hospitals include:

- Five Translational & Clinical Research (TCR) Flagship grants awarded worth S\$25 million each in the areas of gastric cancer, metabolic diseases, schizophrenia, dengue and eye diseases. These programmes, which encourage co-application between clinicians and researchers, were designed to bring together the best complementary research strengths in hospitals and national disease centres, universities and A\*STAR research institutes to focus on a disease or research themes of strategic importance to Singapore.

- (June 2013) Pfizer, GlaxoSmithKline and Siemens became founding members of a new consortium set up by Singapore's A\*STAR which aims at addressing problems related to the pharma and healthcare industry.

### **Has the government of Singapore launched any special initiatives to support the pharma and healthcare industry in Singapore?**

Koh Jin Hoe: The government provides awards to clinician-scientists such as the Singapore Translational Research (STaR) Investigator Award, Clinician Scientist Award (CSA), which provides research funding and salary support to enable medical researchers to devote more time to research. More recently, the Singapore government has availed a new Clinical Trial Grant (CTG) to support clinicians in carrying out clinical trial studies for novel therapies for healthcare needs, which can also co-fund industry collaborations.

On top of awards to individuals, the Singapore government has sponsored S\$25 million Translational & Clinical Research (TCR) Flagship Programmes for researchers and clinician scientists to solve scientific problems and translate their research into quality healthcare solutions for patients. Each award is for a maximum of S\$10 million per programme, over three to five years.

The government has created an industry-government group, Biopharmaceutical Manufacturers' Advisory Council (BMAC), comprising local pharmaceutical plant site directors and government agencies. This constant dialogue between government and industry underscores Singapore's commitment to lead the manufacturing curve with a highly-skilled manufacturing workforce, a track record of quality and process development capabilities by upgrading best practices.

### **Are Indian pharma companies interested in investing in the pharma sector of Singapore? Where do you see the Indian pharma industry today? What kind of opportunities does Singapore provide to Indian pharma companies?**

Koh Jin Hoe: In the Pharmaceuticals & Biotech sector, Indian companies can partner Singapore institutions for innovative development of new medicines, formulation capabilities and drug delivery mechanisms. Singapore has research institutes that are able to support some of their endeavours. Singapore has invested heavily in Asia-prevalent diseases such as cardiovascular disease, diabetes, gastric cancer and dengue. As some of these diseases have a high incidence in Indians, leading Indian pharmaceutical companies have expressed interest to work with Singapore clinical institutions to develop new drugs for these diseases. Indian companies will be able to tap on these research foundations to enhance their capabilities and leverage on each other's strengths in the research for these areas.

We will continue to engage with Indian pharma companies to meet their evolving needs as they continue to grow their international footprint and seek external R&D collaboration opportunities.

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- (Between 2006 and 2010) Through the Singapore Immunology Network (SiGN)'s extramural grant calls, S\$23 million were awarded to fund 39 internationally-reviewed projects, many of which were joint projects with the clinical community in Singapore.
- (November 2009) The Institute of Bioengineering and Nanotechnology (IBN)'s iCare and the National University Hospital Eye Centre at Biopolis started an open collaboration platform to develop novel nanomaterials for ocular therapy.

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On top of awards to individuals, the Singapore government has sponsored S\$25 million Translational & Clinical Research (TCR) Flagship Programmes for researchers and clinician scientists to solve scientific problems and translate their research into quality healthcare solutions for patients. A separate Competitive Research Programme (CRP) helps to identify new potential strategic research areas in which Singapore can invest, particularly the biomedical sciences translational and clinical research areas. Each award is for a maximum of S\$10 million per programme, over three to five years. Also, The Health Services Research Competitive Research Grants were established in 2009 to promote the conduct of HSR and enable the translation of HSR findings into policy and practice.

To coordinate across the various research players, Singapore has set up a national Biomedical Sciences Industry Partnership Office (BMS IPO) staffed scientifically qualified individuals to help companies interested in collaboration to identify the right partners and manage the collaboration framework within the Singapore scientific community.

Within the pharma manufacturing community, the government has created an industry-government group, Biopharmaceutical Manufacturers' Advisory Council (BMAC), comprising local pharmaceutical plant site directors and government agencies. This constant dialogue between government and industry underscores Singapore's commitment to lead the manufacturing curve with a highly-skilled manufacturing workforce, a track record of quality and process development capabilities by upgrading employees' skills, training new workers and promoting best practices.

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