Opening Address by Mr Heng Swee Keat, Deputy Prime Minister of Singapore, Minister for Finance and Chairman of the National Research Foundation, at the Official Opening of the Experimental Drug Development Centre on Wednesday, 26 June 2019, at Matrix Biopolis

Ms Chan Lai Fung, Permanent Secretary (National Research & Development) and Chairman A*STAR

Mr Frederick Chew, CEO, A*STAR

Dr Damian O’Connell, CEO, Experimental Drug Development Centre

Ladies and Gentlemen

1. A very good morning to everyone. I am very happy to join you for this official opening of the Experimental Drug Development Centre (EDDC). This marks a significant milestone for drug development in Singapore.

2. The late Nobel Laureate, Dr Sydney Brenner, first visited Singapore in 1983. During his visit, Dr Brenner met our founding Prime Minister, Mr Lee Kuan Yew, and they discussed the setting up of a research institute in molecular and cell biology.

   a. The Institute of Molecular and Cell Biology was formed in 1985, and this marked the beginning of our biomedical sciences (BMS) journey.

   b. Dr Brenner went on to spend a significant part of his life in Singapore, contributing to the growth of the BMS sector. Sadly, Dr Brenner passed away in Singapore two months ago, at a ripe-old age of ninety-two. His legacy lives on, and we take this occasion to express our gratitude to Dr Brenner and his family for his significant contribution to Singapore.
3. Over the last thirty-five years, we have grown the BMS sector into a pillar of the Singapore economy. The BMS sector now makes up almost 4 per cent of our GDP, and employs more than 22,000 workers. Singapore manufactures 4 out of the world’s top 10 medicines, and has been rated as the most attractive newcomer market for biopharmaceutical investments¹.

   a. We have grown our biomedical research capabilities significantly, and A*STAR has consistently been ranked among the top ten biotech innovators in cancer research in Asia².

   b. And, as Lai Fung mentioned earlier in her speech, we have also decided to build new capabilities – to translate innovative biomedical research discoveries into breakthrough new treatments. In this way, we unlock the value of our research discoveries. We started our first drug discovery and development unit in 2006. And as we became successful in this space, we set-up two more. As the units operated in adjacent spaces, it became clear that we should integrate the three units into one.

4. So we are here today for the official opening of the EDDC as our national drug discovery and development platform. The EDDC is the amalgamation of our three existing drug discovery and development units³. The EDDC will not only work with A*STAR research institutes, but also with hospitals, universities and companies to translate research discoveries into new medicines. The opening of the EDDC also points to three broader developments in the BMS sector:

   a. First, Singapore can play its part in meeting the global demand for healthcare;
   b. Second, working together is key to creating greater value in drug development; and
   c. Third, the circulation of talent is critical to strengthening collaboration within the eco-system.

¹ 2017 Biopharmaceutical Competitiveness and Investment (BCI) Survey
² 2017 State of Innovation Report – Clarivate Analytics
³ The Experimental Therapeutics Centre (ETC), The Experimental Biotherapeutics Centre (EBC) and the Drug Discovery and Development unit (D3)
Singapore can play its part in meeting the global demand for healthcare

5. First, Singapore can play its part in meeting the global demand for healthcare, especially as growth in Asia is expected to outpace the global average\(^4\). The pharmaceutical market alone is projected to reach US$1.2 trillion by 2024\(^5\), growing at an average of 6.4 per cent over the next few years.

   a. In particular, the rapidly increasing incidence and mortality of cancer worldwide is a growing concern. And almost half of all new cases of cancer are occurring in Asia\(^6\).

   b. The types of cancers that prevail in Asian populations differ somewhat from those commonly seen in Western countries. Hence there is an urgent need to develop customised treatments that are effective for people in our region – based on research over a multi-country clinical cohort that is primarily Asian.

6. Singapore can play its part in meeting this growth in global demand. We are the third largest health-tech investment ecosystem in Asia, after China and India\(^7\). Singapore also has a multi-ethnic population that encompasses the major ethnicities in Asia, which will aid in our drug discovery and development efforts aimed at the Asian market.

   a. We have built up a stable of close to 100 local biotech companies, and they are contributing to drug discovery and development in their own ways.

      i. A promising example is home-grown drug candidate, ETC-206, which is currently developed by A*STAR and Duke-NUS. ETC-206 has been licensed to local biotech company, AUM Biosciences. And the EDDC is working with AUM Biosciences to

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\(^4\) Gearing up for a global gravity shift, PricewaterhouseCoopers (2007); Pharmaceutical Drugs Global Market report 2018, The Business Research Company

\(^5\) EvaluatePharma World Preview 2018, Outlook to 2024

\(^6\) International Agency for Research on Cancer (IARC), World Health Organisation – Press Release (12 Sep 2018)

\(^7\) Galengrowth report – Healthtech Investment Landscape Full Year 2018
accelerate the development of the drug for the treatment of a range of cancers.

b. Some of our biotech companies have also set-up manufacturing and clinical trial operations in key markets overseas, to better meet the growing needs in Asia.

i. Lion TCR is one example. Lion TCR is a Singapore start-up, which draws on research from A*STAR to develop precision T-Cell Receptor immune cell therapy for liver cancer. The company has successfully raised private funding to conduct clinical trials. Having identified China as a key market for its product, Lion TCR decided to also conduct clinical trials and manufacturing operations there. Lai Fung and I visited Lion TCR’s Good Manufacturing Practices (GMP) facility in the China-Singapore Guangzhou Knowledge City, during our trip to China last month. I also understand that the company has since opened a new GMP facility in Shanghai two days ago.

7. Singapore’s biotech companies can collectively contribute to improving the lives of patients and their families in Asia, and open up new markets for their technologies and our economy. Our three largest biotech companies were reported to have an estimated collective valuation of more than US$1 billion\(^8\). I hope to see our first biotech unicorn soon.

**Working together is key to creating greater value in drug development**

8. This brings me to my second point on developments in the BMS sector. Given the breadth of expertise required to be successful in this field, working together is key to creating greater value in drug development.

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\(^8\) Cell Research Corporation (S$700M); Tessa Therapeutics (S$650M); Aslan Pharmaceutical (S$400M). Based on publicly available media articles.
a. Drug discovery and development is not an easy ground to till. Even in the best circumstances, drug development takes years. It is a complex and challenging process that requires expertise in different scientific fields.

b. In recent years, the pharmaceutical industry has been challenged by rising costs, low research productivity and tighter regulations, at a time when many key products are facing patent expiration.

c. Collaboration is key, and this has never been more true. To overcome the challenges faced, there has been a marked shift in pursuing more transparency and greater collaboration in drug discovery and development.

d. This requires academia, healthcare institutions, the private sector, and government agencies to work together to undertake more cross-sector and inter-disciplinary projects, which can lead to better drug development outcomes.

9. The opening of the EDDC is therefore timely, as it provides a national platform to bring different players together along different parts of the drug discovery and development value chain, right up to the point of commercialisation.

a. Take the drug candidate, ETC-159, for example. This was co-developed by researchers in Duke-NUS and A*STAR, and benefited from development work by the EDDC’s predecessors. ETC-159 entered first-in-man clinical trials in 2015, and is now moving into the next phase of clinical trials. Should this be successful, it would provide new treatment options for patients with advanced cancer.

10. In the spirit of working together, I am happy to announce two new collaborations at the official opening of the EDDC this morning. We will be witnessing the signing of the Memorandums of Understanding (MOUs) later this morning.

a. The first MOU, between A*STAR, Duke-NUS, the Lee Kong Chian School of Medicine, NTU, NHG, NUS, NUHS and SingHealth, will mark the formation
of a national Target Translation Consortium (TTC). The TTC will draw on the expertise of its members to identify the best projects to take forward nationally, and to strengthen the local pipeline of promising novel drugs.

b. The second MOU, between A*STAR, the National Health Innovation Centre, and the Singapore-MIT Alliance for Research and Technology (SMART), will form the Singapore Therapeutics Development Review pathway. This will pool together each organisation’s expertise and resources, to increase the chances for successful commercialisation.

c. This is a good start, and I look forward to many more collaborations in the months and years ahead.

Circulation of talent is critical for strengthening collaboration within the eco-system

11. The third development in the BMS sector that I would like to highlight today is the importance of talent circulation, given that collaboration is key to creating greater value. The circulation of talent across academia, healthcare institutions, the private sector, and government agencies is therefore critical for strengthening partnerships and collaboration within the BMS eco-system.

12. Strengthening the base of scientific talent is critical for advancing the BMS sector. We must continue to nurture local researchers and provide them with exciting opportunities to grow, while also welcoming international talent to our fold.

13. But we not only need scientists with the passion and expertise, but also those who are willing and able to work as part of larger multidisciplinary teams.

   a. We should therefore encourage a good circulation of talent – between academia, biotech and pharma companies, healthcare institutions and government agencies – to enhance the vibrancy of our ecosystem.
b. This way, we can grow a critical mass of individuals who understand the perspective of different stakeholders, and can better bring them together to collaborate on concrete programs.

14. Let me cite three examples of individuals who have circulated through different parts of the BMS ecosystem - all three of them are here with us today.

a. First, Dr Ang Hwee Ching, who is currently the Director of Business Development at EDDC. She started her post-doctoral career at A*STAR and subsequently pursued her interests in business development at top pharmaceutical companies like Eli Lilly and Bayer. After ten years in the private sector, Hwee Ching returned to A*STAR this year to be part of the EDDC team.

b. Second, Dr Joel Leong, who is the Chief Development Officer at EDDC. He is a clinician-scientist with both an MD and a PhD. Prior to joining A*STAR in 2017, he has had many years of experience in the private sector, including as the Executive Director of Clinical Research in Singapore for Novartis.

c. Third, Dr Koh Shu-wen, Deputy Group Chief Technology Officer at NUHS. She started her career with EDB, before moving on to join the Biomedical Sciences Industry Partnership Office (BMS IPO) hosted in A*STAR. She then left for the private sector – first with a US biotech company and later with a local Medtech company. Since 2015, Shu-wen has been with NUHS to bring healthcare innovation and research developments to market.

15. With individuals like Hwee Ching, Joel and Shu-wen, we can better draw different parts of our BMS ecosystem into a tighter nexus for stronger partnerships and collaboration.

Conclusion

16. In conclusion, Singapore can play its part in meeting the global demand for healthcare, particularly in Asia. We have built a strong BMS ecosystem, including a stable of local biotech companies. Collaboration across academia, industry and
the public sector is key to creating greater value in drug discovery and development. And we must equally nurture our pool of scientific talent, and encourage the circulation of talent to tighten the nexus for partnerships and collaboration.

17. The opening of the EDDC is timely as it helps to bridge the “valley of death” between innovative biomedical research discoveries and novel medical treatments. The EDDC also provides a collaborative platform to bring together different players along different parts of the drug discovery and development value chain.

18. I am confident that EDDC will rise to the challenge, and continue to build on the good work of its predecessors. I wish the EDDC every success for the future. Thank you.