

CITATIONS OF WINNERS

PRESIDENT'S SCIENCE AND TECHNOLOGY MEDAL 2017

Professor Sir David Philip Lane

Chief Scientist, A*STAR

Director, p53 Laboratory, A*STAR

Chairman, Chugai Pharmabody Research Pte Ltd

“For his important role in the strategic development of Singapore’s biomedical sciences and distinguished contributions to cancer therapeutics and research”

Professor Sir David Lane contributed immensely to the establishment of biomedical sciences as the fourth pillar of Singapore’s economy, through various roles he held in A*STAR over the last 15 years. He played a leadership role in the development of Singapore’s R&D culture and infrastructure, as well as the attraction of talent and anchoring of industry partners in the country. Professor Lane’s accomplishments have had a far-reaching impact on cancer therapeutics and research locally and internationally.

As Chief Scientist of A*STAR since 2009, Professor Lane has advised on and engaged in scientific development across the agency’s Biomedical Research Council (BMRC) and the Scientific Engineering Research Council at a strategic level. Professor Lane has helped establish A*STAR’s cross-disciplinary research and development initiatives to further strengthen collaborations and explore new areas of multidisciplinary research. Since 2015, A*STAR has been ranked one of the top 10 World’s Most Innovative Research Institutions by Thomson Reuters.

Professor Lane served as Chairman of A*STAR’s Institute of Molecular and Cell Biology (IMCB) scientific advisory board from 2002 to 2003, and as Executive Director of IMCB from 2004 to 2007. During this period he recruited many outstanding scientists and personally led efforts to foster greater collaboration, both within and beyond IMCB. Today, IMCB is well-regarded by the international research community as a premier molecular biology institute synonymous with research excellence and success. It has trained more than 250 PhD students, developed more than 800 postdoctoral fellows, and published over 2,500 research papers in top international peer-reviewed journals.

A*STAR’s Experimental Therapeutics Centre (ETC) is a drug discovery and translational unit that was set up at the end of 2006. As the founding CEO, Professor Lane put in place a robust team of more than 60 scientists and built top-of-the-line technological platforms essential for the drug discovery business. This strong

foundation paved the way for several successes by ETC including the placement of two promising drug candidates in clinical trials, and a diverse pipeline of more than a dozen drug discovery projects.

Concurrent to his appointment as CEO of ETC from 2007 to 2009, Professor Lane was also Chairman of BMRC. He was involved in charting strategic directions for the BMRC research institutes, consortia and centres in preparation for the then-impending RIE2015 phase of Singapore's Biomedical Initiative. During RIE2015, A*STAR engaged in almost 9,000 industry projects, catalysed S\$1.6 billion in industry R&D spending, and signed more than 1,000 licenses to SMEs and start-ups.

Professor Lane was also closely involved in anchoring industry partners, such as Chugai Pharmabody Research (CPR), in Singapore. Professor Lane helped establish CPR in Singapore in 2012 and served as founding Chairman of the CPR Board. A wholly owned subsidiary of Chugai Pharmaceuticals, CPR employs over 100 staff at Biopolis working on developing advanced antibody products. CPR also announced its commitment of S\$476 million to its Singapore research facility until 2021, one of the largest R&D commitments by a pharmaceutical company in Singapore in the past five years. CPR and its proprietary antibody research technologies puts Singapore at the centre of the fight against diseases such as cancer and severe autoimmune diseases. In particular, CPR is now working jointly with A*STAR to co-develop an antibody treatment against dengue, in a project funded by the Global Health Innovative Technology (GHIT) Fund.

In addition to Professor Lane's influence in attracting industry investment to Singapore, his work has also had a tremendous impact on Singapore's drug development landscape. He played a significant role in the landmark discovery of the p53 cancer gene in 1979, and nearly three decades of subsequent research that has brought p53 all the way from basic discovery through to the clinic. Professor Lane founded and heads the A*STAR p53 Laboratory, one of the leading labs globally in the field that focuses its research on protein interactions and how to develop drugs to inhibit such interactions using p53 as a model system.

The p53 gene, also called the "Guardian of the genome", is considered to be the most significant of all genes altered in cancer cells because mutations in p53 are known to cause more than half of all human cancers. It was selected as Science Magazine's "Molecule of the Year", and over 40,000 papers on p53 have been published.

Professor Lane's discovery has led to the identification of several promising targets for developing new cancer drugs, one of which is the utilisation of antibodies and peptides to interrogate cancer targets. His contribution to the field of using a more chemically-stable form of peptides called "stapled peptides" is particularly profound as it could result in a new generation of therapeutics that might be able to drug previously "undruggable" cancer mutations.

Professor Lane has also distinguished himself through his work in developing novel cancer targets using monoclonal antibodies. One such promising project was an antibody raised against RON (recepteur d'origine Nantais) kinase. In 2016, ASLAN Pharmaceuticals, a promising Singapore biotech start-up, licensed the RON kinase antibody from the A*STAR p53 Laboratory for further development and entered into a three-year research collaboration to continue preclinical development of this novel antibody. Professor Lane serves as Chairman of the Scientific Advisory Board for ASLAN Pharmaceuticals as they work towards achieving their goal of transforming treatments for cancers that are prevalent in Asia.

For his efforts in cancer research, Professor Lane was knighted in 2000 and has won many prestigious international awards. He has published more than 400 research articles in international peer reviewed journals, of which more than 150 were published in his various capacities in Singapore. Many of them have been very highly cited.

As a thought leader with a global network of influence, Professor Lane has made a profound impact on talent recruitment and development within Singapore's research ecosystem, recruiting many other scientific luminaries to Singapore. He continues to play an active role in nurturing and leading the next generation of scientists.

For his important role in the strategic development of Singapore's biomedical sciences and distinguished contributions to cancer therapeutics and research, Professor Sir David Lane is awarded the 2017 President's Science and Technology Medal.