

NUS Medicine researcher wins Gabbay award for CAR-T Immunotherapy

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NUH patients treated using CAR-T immunotherapy now cancer-free



NUS Yong Loo Lin School of Medicine, on 31 July 2019, announced its international award for successful ground-breaking CAR-T cell immunotherapy. The Jacob and Louise Gabbay Award in Biotechnology and Medicine recognise scientists in academia, medicine or industry whose work hold outstanding scientific content and significant practical consequences in the biomedical sciences.

Prof Dario Campana is one of two pioneer researchers in CAR-T cell therapy, who successfully treated children and adults with Acute Lymphoblastic Leukemia (ALL) recently at National University Hospital (NUH), Singapore.

In CAR-T cell therapy, a patient's immune cells produced in the body are programmed in the laboratory to become cancer cell killers. The immune cells, known as T cells, are drawn from a patient's blood and equipped with a Chimeric Antigen Receptor (CAR), a special receptor that binds to a specific protein on the patient's cancer cells. Large numbers of the CAR-T cells are grown in the laboratory and then infused into the patient.

The study of the CAR-T cell therapy is expected to involve about 100 patients including adults and children over a period of 5 to 10 years. Additionally, the trials will help train more doctors in the use of CAR-T cells and also examine other ways in which the CAR could be used to treat other forms of leukemia and cancers.

Prof Campana, Mrs Lee Kong Chian Chair in Advanced Cellular Therapy and director of the Division of Immunopathology and Cell Therapy in the Department of Paediatrics, is also the founder of three biotech companies – Unum Therapeutics in Cambridge, Massachusetts, Nkarta Therapeutics in South San Francisco, California, and Medisix Therapeutics in Singapore. He shares the Gabbay award with another CAR-T cell researcher, Dr Michel Sadelain, director of the Center for Cell Engineering at the Memorial Sloan Kettering Cancer Centre in the US.

The Gabbay Award, given out annually and to be presented to this year's winners on 2 October at Brandeis University in the US, consists of a medallion and a USD\$25,000 cash prize or USD\$30,000 to be shared between awardees. Recipients travel to Brandeis University in the fall of each year and present a lecture on their work, followed by a dinner at which the formal presentation takes place. Nominations are solicited from selected scientists in industry and academia worldwide. They are considered by a panel of distinguished researchers representing the biotechnology and pharmaceutical industries, as well as universities and schools of medicine.

Prof Dagmar Ringe, who oversees the Gabbay Award selection process, said, "The advances developed by these researchers provide a broad platform to enhance CAR T-cell therapy, leading directly to the development of new CAR T-cell therapies that are showing increasing efficacy in patients."

Expressing his appreciation, Prof Campana said, "I am pleased that the Gabbay committee identified CAR-T cells for recognition this year, and am honoured to be a recipient of the award together with Dr Sadelain. CAR-T cell therapy is having a dramatic impact on ALL treatment; we are currently working hard to improve this technology to extend it to other forms of cancer."

Professor Chong Yap Seng, Dean, NUS Yong Loo Lin School of Medicine, said, "Prof Campana is continuing to innovate at the forefront of cancer immunotherapy, bringing tremendous hope to cancer patients. Through his leadership of our clinicians, he has helped to establish a fledgeling cellular immunotherapy program at the National University Hospital that is already helping patients with blood cancer. These contributions are immensely important."

At the NUH, Prof Campana's research has been used to treat 10 children and young adults with ALL for whom chemotherapy (the standard treatment for ALL) was not working effectively, said Associate Professor Allen Yeoh, VIVA-Goh Foundation Professor in Paediatric Oncology and Senior Consultant, Division of Paediatric Haematology and Oncology. All 10 patients are doing well after treatment.

"Prof Campana's work brings hope to cancer patients. Working together with doctors in NUH, he started a cell-based immunotherapy programme for children and adults with refractory blood cancers. For the first time, without needing to go to the USA, Singaporeans with relapsed/resistant ALL that was previously considered incurable can now receive such life-saving treatment in Singapore."

Assoc Prof Yeoh added, "We are glad to be able to provide compassionate CAR-T cell therapy for Singapore and ASEAN children with relapsed/resistant ALL. Alongside Prof Campana's team, we hope to start CAR-T cell therapy trials in January 2020 for children and adults with high risk and relapsed/resistant ALL."

The Advanced Cellular Therapy programme at NUS Medicine is made possible by generous donations from the Goh Foundation; Children's Cancer Foundation; Mrs Lee Kong Chian Chair for Advanced Cellular Therapy and Viva Foundation for Children with Cancer.

Image: Professor Dario Campana (Department of Paediatrics)