

Professor KAN Yuet-Wai

Citation

One of the world's leading human genetics experts, Prof. KAN Yuet-Wai pioneered the use of DNA testing to diagnose complex genetic diseases and empowered the extensive subsequent application of genetic analysis. Describing his research process as a "slow-boat from China", the professor's remarkable single-mindedness proved hugely useful in unlocking the mysteries surrounding human blood diseases such as sickle cell anemia and thalassemia.

Born in Hong Kong in 1936, the professor was the youngest of 14 children in the family of Bank of East Asia co-founder, KAN Tong-Po. While his older siblings became lawyers or financiers, his father suggested he pursue a career in medicine. The future scientist accepted the advice and earned a Bachelor of Medicine and Bachelor of Surgery degree from the University of Hong Kong in 1958.

Having spent two years as a resident intern at Queen Mary Hospital, Prof. Kan's inexhaustible scientific curiosity led him down a different path to conventional medicine. After deciding to study hematology in the US, he spent the early 1960s undergoing training at various prestigious medical institutions and universities including the Massachusetts Institute of Technology.

A major turning point in Prof. Kan's research career came when revered hematology authority Louis LOWENSTEIN recruited him for his Canadian research team in 1963. In a development

he ascribes to fate, the professor was asked to consult on the premature death of a newborn baby, who was afflicted with severe anemia, a common condition caused by thalassemia. Intrigued by a field that was then still largely unknown, Prof. Kan decided to investigate further.

The professor returned to the US and embarked on his new research quest at Boston Children's Hospital. Using the emerging biotechnology available at the time, he studied the protein synthesis in various thalassemic conditions and eventually helped to define the different thalassemia syndromes. Driven by his quest for knowledge and requiring a normal model for an experiment, the professor even harvested a sample of his newborn daughter's blood for use in one study.

After much research and analysis, Prof. Kan and his team established that newborns afflicted with thalassemia lacked the alpha globin gene. This was the landmark first time DNA testing had been used to diagnose a human condition. In the 1970s, Prof. Kan's discovery of a human genetic variation called DNA polymorphism led to the development of DNA-based pre-natal diagnosis of sickle cell disease and various other genetic disorders.

As the only cure for thalassemia and sickle cell disease involves bone marrow and/or cord blood transfusions, most sufferers can only be

treated for symptoms and complications. Prof. Kan's revolutionary advances made it possible to alert at-risk parents before they decided to have children. Pre-birth detection of such diseases ultimately enabled special monitoring and treatments that minimized the likely impact and stresses facing such couples.

Prof. Kan's tremendous contribution to science have been recognized with numerous prestigious accolades. In addition to the Shaw Foundation Prize in Life Science and Medicine, they include a Lifetime Achievement Award from the Society of Chinese Bioscientists in America. He also became the first Chinese Fellow of the UK's Royal Society in 1981. A member of the US National Academy of Sciences, the professor also sat on the US President's Committee on the National Medal of Science.

Over the years, Prof. Kan has worked with many leading universities, medical and clinical institutes in Canada and the US. In addition to being appointed assistant professor at Harvard University in 1971, he also served as Investigator at the Howard Hughes Medical Institute from 1976 until his retirement from the institute in 2003. Between 1983 and 2021, the professor headed up the Genetics and Molecular Hematology lab at the University of California San Francisco, where he currently occupies its Louis K. Diamond Chair in Hematology and is a Professor Emeritus.

Prof. Kan's relationship with HKUST began when he gave a Distinguished Lecture in Science here in 1992. Chairman of the Croucher Foundation of Hong Kong from 1997 to 2011, the professor was instrumental in funding research into the natural sciences, technology and medicine at HKUST and several other local universities.

Council Chairman, on behalf of the Council of the Hong Kong University of Science and Technology, I have the high honor of presenting to you, Prof. Kan Yuet-Wai, Louis K. Diamond Chair in Hematology and Professor Emeritus at the University of California San Francisco, for the award of Doctor of Science *honoris causa*.