

PLENARY SPEAKER



Engineering in Translational Science: Innovation Platform for Scientific Research and Impact

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ABSTRACT

The Engineering in Translational Science Group (ETS) has a common goal to develop innovative solutions for global health problems based on engineering strategies. Our team brings together expertise from engineering, chemistry, physics, biology, and medical science in order to understand emerging clinical problems at the molecular scale and to apply this knowledge to the creation of medical technologies that improve human health.

One of the most significant health problems driving the research at ETS deals with infectious diseases for which time is limited and whose impact is global. Throughout history, infectious diseases have shaped population demographics, hindered economic potential, and most critically robbed far too many individuals of their lives. Despite advances in therapeutic drugs and tools, much work remains towards the eradication of infectious diseases.

Our research strategies are inspired by fundamental science and engineering approaches to combat infectious diseases by discovering new drug targets and creating more effective antiviral therapies. The rationale is simple and pragmatic. We embrace the scientific vision of bench to bedside and recognize the need to address critical health problems with solutions readily translatable to the real world.

BIOGRAPHY

Professor Cho obtained his BSc from the University of California, Berkeley in 1996, and his MSc and PhD from Stanford University in 2003 and 2007 respectively. He joined NTU as a Nanyang Associate Professor (NRF) in 2011, and was granted tenure in September 2016.

Professor Cho's recent pioneering work on the concept of lipid envelope antiviral disruption as an antiviral strategy to treat and prevent viral infections, is of great impact and significance. Together with his team, he invented a brain-penetrating antiviral peptide that demonstrated the highest therapeutic performance reported to-date to treat the Zika virus infection in the brain *in vivo*. This work was published in *Nature Materials*, and has received global media coverage. Furthermore, his biomedical inventions have led to the successful development of several antiviral drugs in human clinical trials and the formation of a publicly-traded biopharmaceutical company in the United States. Professor Cho has also been active in exploring the fascinating material properties of pollen-based microcapsules and developing new classes of pollen-based materials.

Over the years, Professor Cho has successfully garnered numerous external grants totaling over S\$12 million, and has 6 licensed patents to his name. His high international visibility is reflected by the many keynotes and invited presentations he has delivered at top international conferences. Due to his strong reputation in the field, he has served as an Editorial Board Member of *Langmuir*, *ACS* and *Applied Materials Today*, Elsevier.