IMCB Invited Speaker

Speaker : **Prof. JianZhu Chen**

Ivan R. Cottrell Professor of Immunology, Professor of Biology, Koch Institute for Integrative Cancer Research & Dept. Of Biology, Massachusetts Institute of Technology, USA

Date : 24 August 2012 (Friday)

Time : 11:00AM - 12:00PM

Venue : Level 3, IMCB Seminar Room 3-46, Proteos, Biopolis

Host : Prof. Wanjin Hong

Seminar :

Polymer-attached Inhibitors of Influenza Viruses

Epidemics and pandemics caused by influenza A viruses inflict enormous suffering and economical loss. Currently, two strategies are used for influenza control - vaccines and conventional drugs. Neither is ideal. Vaccination is hampered by the logistical challenges of predicting future circulating strains and quickly producing enough vaccine for large populations. The small molecular weight inhibitors are rendered useless by the emergence of stable and transmissible drug-resistant influenza viruses. We have established a novel strategy for developing the next generation of potent anti-influenza drugs that can overcome, or significantly minimize, drug resistance. It is based on the observation that polymeric inhibitors are much more potent than their conventional monomeric precursors and the principle of combination therapy of simultaneously interfering with two distinct targets on the virus. Specifically, we have prepared biodegradable poly-L-glutamine (PGN) to which small molecular weight inhibitors are covalently attached. We show that the polymeric inhibitor i) is much more potent than monomeric counterpart, ii) remains effective against drug-resistant isolates of influenza viruses, iii) and suppresses the emergence of drug-resistant viruses. The dramatically increased efficacy of the polymeric inhibitor is partly because the polymeric inhibitor acquires new mechanism of action. Our overall strategy may serve as an instructive paradigm for developing potent drugs that can minimize drug resistance.

About the Speaker :

Jianzhu Chen is the Ivan R. Cottrell Professor of Immunology and Professor of Biology at Koch Institute for Integrative Cancer Research and Department of Biology at MIT. Dr. Chen's research seeks fundamental understanding of the immune system as well as its application in vaccination and immunotherapy. He investigates cellular and molecular basis of immunological memory using CD8 T cell responses to influenza virus as a model. He studies CD8 T cell-prostate cancer interactions with a long-term goal of developing more effective cancer immunotherapy. He is also actively engaged in developing humanized mouse models for studying human immune responses to infections, for modeling human diseases, and for therapeutic development. In the latter capacity, he leads the Infectious Disease Interdisciplinary Research Program of Singapore-MIT Alliance in Research and Technology (SMART). Dr. Chen has published over one hundred scientific papers in diverse biological subjects. His works has led to multiple patents and patent applications.

Dr. Chen received a B.S. degree from Wuhan University in China and a Ph.D. degree from Stanford University. He was a postdoctoral fellow and then an instructor at Harvard Medical School before he joined the faculty in the Department of Biology at MIT. Dr. Chen is also an adjunct professor at Institute of Biophysics, Chinese Academy of Sciences in Beijing.

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