

K4. Keynote Lecture

Emerging microbial agents in humans and animals in Hong Kong and Southern China



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Professor Kwok-yung Yuen, Academician of the Chinese Academy of Engineering (Basic Medicine and Health) and Silver Bauhinia Star Awardee of the Hong Kong Special Administrative Region of China, was born in Hong Kong and graduated from the Medical School at the University of Hong Kong. He is also Fellow of the Royal College of Physicians (Lond, Edin), Surgeons (Glas) and Pathologists (UK). After years of clinical and laboratory training, he established the infectious disease service and rapid molecular diagnosis for cytomegalovirus and tuberculosis at the Queen Mary Hospital, the teaching hospital of the University of Hong Kong. In the outbreak of avian influenza virus H5N1 in 1997 in Hong Kong, Professor Yuen was the first to report in *Lancet* about the unusual clinical severity and high mortality of infected patients which could be identified by the in-house designed molecular test at his laboratory. During the outbreak of SARS in 2003, he led his team in the discovery of the SARS coronavirus and was honoured as one of the Asian heroes of the year in April by *Time Asia Magazine*. Subsequently he found the natural reservoir of SARS-coronavirus-like virus in Chinese horseshoe bat and renewed the interest in bats as the source of novel microbes causing emerging infectious diseases. His success in finding novel microbes in human and animals is exemplified by the discovery of human coronavirus HKU1, bat coronaviruses HKU2 to 13, bovine and porcine hokovirus and *Laribacter hongkongensis* in fish and humans. Professor Yuen is currently the Chair of Infectious Disease, Head of the Department of Microbiology of the University of Hong Kong. He is also the co-director of the state key laboratory of emerging infectious disease of China in Hong Kong Special Administrative Region, and the founding co-director of the Hong Kong University-Pasteur Research Centre. His 400 publications with over 10,000 citations are mainly related to the research of novel microbes or emerging infectious disease agents.

Though new agents are discovered in Hong Kong, the source could well be from the Mainland but were detected in Hong Kong because of its relatively better surveillance and laboratory infrastructure. The tremendous economic growth of many developing countries including China, India and Mexico, known as the world factories, has improved livelihood of their citizens. These improvements were followed by their desire for longevity and health, and therefore demand for dietary protein, drugs and health products. Such demand can only be satisfied by a great increase in farm or market animals by intensive farming and food, drug and health products' manufacturing. However, such change in practice is not met by the corresponding improvement in biosecurity and regulatory measures. This places HKSAR in a good position as a leader in the discovery of novel microbes which may be associated with human or animal diseases. Besides the human, civet and bat SARS coronaviruses, human coronavirus HKU1, bat coronavirus HKU2 to 13, bovine and porcine hokovirus (parvoviridae), the bat tuhokovirus (a paramyxovirus), avian turdivirus (a picornavirus), and bat astrovirus were also discovered in HKSAR. Many of the novel bacteria and fungi discovered here were named after Hong Kong and China, including *Laribacter hongkongensis* in fish, frogs and human, *Streptococcus sinensis*, *Aspidisca hongkongensis*, *Lichtheimia hongkongensis*, *Catabacter hongkongensis*, *Fangia hongkongensis*, *Sedimentibacter hongkongensis*, *Alkanindiges hongkongensis*, *Anaerospira hongkongensis*, *Eggerthella hongkongensis*, and *Actinomyces hongkongensis*. The majority of these microbes were originally found in clinical specimens such as blood or pus before being traced back to an animal source in some of them. Such findings have led to the successful control of SARS re-emergence by the banning of game food animals in wild life markets.