

presents the seminar series in **Cancer Biology,  
Biotherapy and Nanomedicine**

# “Investigation into bacterial antimicrobial resistance and novel antibiotic development”

**Prof. Sheng Chen**

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Hong Kong Polytechnic University**

**Date : 17 May 2018**

**Time: 4:00pm to 5:00pm**

**Venue: Meeting Room 2-130, 1/F, Block 2, To Yuen Building**

## Abstract

The emergence of novel carbapenemase-encoding resistance genes among Gram-negative bacterial pathogens has severely undermined the effectiveness of public health management and completely disrupted one of our last defenses against bacterial infections. Mobile genetic elements such as plasmids harboring the carbapenemase genes, in particular the *bla*<sub>NDM-1</sub> and *bla*<sub>KPC-2</sub> resistance elements, have continued to disseminate rapidly among Gram-negative bacteria worldwide, threatening to take medicine back into the pre-antibiotic era by causing high mortality among patients and drastically reducing treatment choices. A recently discovered plasmid which harbors the colistin-resistant determinant, *mcr-1*, has completely erased our last hope of using the very-last resort agent, the polymyxins, in treatment of diseases caused by multidrug resistant Gram negative bacterial pathogens. A feasible strategy is to discover or invent carbapenemase/MCR-1 inhibitors, which may act synergistically with carbapenems or colistin by restoring their antimicrobial activities to a wide range of bacterial pathogens, especially the resistant organisms. In this talk, I will share with you the updated research in our lab on the mechanisms of carbapenem and/or colistin resistance in bacterial pathogens in the past few years as well as the achievements that we have made on the development of novel antibiotics to combat these multi-drug-resistant bacterial pathogens.

## About the Speaker



Professor Sheng CHEN is a Professor at the Department of Applied Biology and Chemical Technology in the Hong Kong Polytechnic University and Director of Shenzhen Key Lab on Food Biological Safety Control.

He obtained his Doctor of Veterinary Medicine (DVM) from China Agriculture University in 1997 and Ph.D degree from the University of Maryland at College Park in 2004. His current research covers antimicrobial resistance study in Veterinary, Food and Medical Microbiology. His research lies on the interface of clinical study and

basic science using multi-disciplinary approaches with an ultimate goal to develop novel therapies to combat bacterial antimicrobial resistance.

Prof. Sheng Chen participates in the Chinese government's policy making through an ad-hoc working group on microbial guidelines for ready-to-eat food, under the Department of Food and Environmental Hygiene of Hong Kong Government. Prof. Chen is also a member of the Shenzhen Expert Committee to help Shenzhen government's decision on the biotechnology development. He is currently the Director of Shenzhen Key Laboratory for Food Biological Safety Control, Associate Director of the Food Safety and Technology Research Center in the Hong Kong Polytechnic University and past Chairman of Animal Ethic Committee and member of the Central Animal Facility Management Committee at PolyU. He has authored over 110 publications on bacterial pathogenesis and antimicrobial resistance including sever publications in *The New England Journal of Medicine*, *The Lancet Infectious Diseases*, *Nature Communications* and *PNAS*.

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**All are welcome!**