Department of Biomedical Sciences

presents the seminar series in

Cancer Biology, Biotherapy and Nanomedicine

How to quench bacterial fire by altering bacterial genes?

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Date : 24 May 2019
Time : 11:00 - 12:30
Venue : YEUNG-G4701, Yeung Kin Man Academic Building

Abstract

Not too long ago, non-coding RNAs were thought to be junk in mammals; however, recent work has implied that they may be important and powerful regulatory machineries in the body to maintain our homeostasis and defend against potential pathogenic attacks. Here, we identify an intergenic lncRNA MEG3 (linc-MEG3) as a tissue specific regulator for pulmonary immunity in bacterial infection. We revealed that overexpression of linc-MEG3-4 in mice led to intensified inflammatory response, severe lung injury, systemic infection dissemination, and ultimately, increased mortality. We identified that linc-MEG3-4 competitively binds the target IL-1β of miR-138 to intensify inflammatory responses. Our studies also emphasize the important mechanism by which lncRNAs can muffle miRNA function via a decoy effect, representing a new means for possible therapeutic application for infectious diseases. Our ongoing research also indicates that CRISPR-Cas regulates endogenous bacterial genes to alter the mammal host response, which may reshape host-pathogen interaction.

About the Speaker

Professor of Immunology and biochemistry, Department of Biomedical Sciences, University of North Dakota, USA. Wu lab investigates fundamental mechanisms of respiratory infection and immunity to help discover new regulators of disease pathogenesis and progression, ultimately revealing new targets for effective therapy of some horrible superbugs' infection. Considering bacterial virulence and pathogenesis, the lab asks how CRISPR-Cas adaptive immune systems regulate pathogen endogenous gene expression to dictate bacterial invasion and alter the host defense using a combination approach. The long-term goal is to develop novel therapeutic strategies (e.g., antimicrobial compounds, peptides, and gene delivery) and vaccines (e.g., attenuated bacterial strains) that target to our newly identified signal pathways using new nanoparticles in diagnostics, imaging, and therapy.

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All are welcome!