Organised by

National Centre for Infectious Diseases

LEE KONG CHIAN SCHOOL OF MEDICINE

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

Imperial College London

NCID MONTHLY RESEARCH MEETING

BRINGING PEOPLE TOGETHER,

BRIDGING SCIENCE AND MEDICINE

19 July 2024 | Friday | 11.00am – 12.00pm

About the Meeting

Our research meetings are held every 3rd Friday of the month, with the aim to:

- Inspire research ideas and participation
- Provide guidance on research studies
- Foster research collaborations

Who Should Attend

All who are interested in research are welcome to attend.

Programme

11:00 AM **Thiamine Pathway in Microorganisms: A Target for New Antibacterial Drugs**

Dr Li Yingying
Research Fellow
Lee Kong Chian School of Medicine, Nanyang Technological University

11:30 AM **Combating *Mycobacterium abscessus* Infections: Phage Therapy Strategies to Mitigate Phage Resistance**

Mr Liew Jun Hao
PhD Candidate
A*STAR Infectious Diseases Labs: Antimicrobial Resistance lab / Pablo Bifani Lab,
National University of Singapore, Department of Microbiology and Immunology, Yong Loo Lin School of Medicine,
Lee Kong Chian School of Medicine, Nanyang Technological University

5 to 10 mins Q&A will follow after each talk

To Register

This will be a Zoom meeting.
Visit https://for.sg/jul2024researchmeeting or scan QR code.
CME/CNE/CPE points will be awarded.

Thiamine Pathway in Microorganisms: A Target for New Antibacterial Drugs

by **Dr Li Yingying**
Research Fellow
Lee Kong Chian School of Medicine, Nanyang Technological University

This study examines the thiamine pathway as a target for new antibacterial drugs against *Pseudomonas aeruginosa* and *Staphylococcus aureus*. By exploring the role of thiamine biosynthesis in bacterial metabolism, we highlight potential therapeutic strategies.

Learning Points

1. The thiamine pathway is essential for the growth and survival of *P. aeruginosa* and *S. aureus*.
2. Targeting thiamine metabolism offers a novel approach to combatting bacterial infections.
3. The thiL gene, crucial for thiamine biosynthesis in *P. aeruginosa* , is a promising target for disrupting bacterial viability, with Vp3.15 showing significant inhibitory effects.

Combating *Mycobacterium abscessus* Infections: Phage Therapy Strategies to Mitigate Phage Resistance

by **Mr Liew Jun Hao**
PhD Candidate
A*STAR Infectious Diseases Labs: Antimicrobial Resistance lab / Pablo Bifani Lab,
National University of Singapore, Department of Microbiology and Immunology, Yong Loo Lin School of Medicine,
Lee Kong Chian School of Medicine, Nanyang Technological University

Mycobacterium abscessus (*MABS*) is a rising global concern due to its intrinsic resistance to many antimicrobials. To explore alternative therapeutics, we aim to develop phage cocktails with efficient kill kinetics. Phage resistance studies provided insights to propose a two-layered phage combination that showed effectiveness in clearing *MABS* and set the stage for future phage cocktail strategies.

Learning Points

1. Morphotype switching is a mechanism of phage resistance in *MABS*.
2. Zebrafish and mice are potential in vivo models to study phage resistance and effectiveness in *MABS*.
3. Strategic designing of phage cocktails demonstrated enhanced bacterial killing efficacy compared to the single-phage treatments.