Organised by

National Centre for Infectious Diseases

NUS National University of Singapore | Infectious Diseases Translational Research Programme, Yong Loo Lin School of Medicine

NCID MONTHLY RESEARCH MEETING:

BRINGING PEOPLE TOGETHER,

BRIDGING SCIENCE AND MEDICINE

18 Jun 2021 | Friday | 11.00 am – 12.30 pm

This meeting is co-hosted with Infectious Diseases Translational Research Programme (ID TRP), NUS Yong Loo Lin School of Medicine (NUS YLLSOM)

About the Meeting

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

1) Inspire research ideas and participation
2) Provide guidance on research studies
3) Foster research collaborations

Who should attend

All who are interested in research are welcome to attend.

To register

This will be a Zoom meeting. Please register using the link or QR code below.
http://tiny.cc/junresearchmeeting

PROGRAMME

11:00 AM "**Engineered Bacteriophages for Safer and More Effective Antimicrobial Therapeutic Agents**"
by **Dr John Chen**
Assistant Professor, ID TRP, Department of Microbiology & Immunology, NUS YLLSOM

11:30 AM "**Old Concepts, New Tricks: Phage Diagnostics and Therapy in the 21st Century**"
by **A/Prof Pablo Bifani**
Research Director, ID TRP, Department of Microbiology & Immunology, NUS YLLSOM

12:00 PM "**Identifying Antimicrobial Compounds Using Pathway-directed Screening**"
by **Dr Sham Lok To, Chris**
Assistant Professor, ID TRP, Department of Microbiology & Immunology, NUS YLLSOM

*CME/CPE points will be awarded

Engineered Bacteriophages for Safer and More Effective Antimicrobial Therapeutic Agents

by **Dr John Chen**

Assistant Professor, ID TRP, Department of Microbiology & Immunology,
NUS YLLSOM

Bacteriophage therapy employs the natural enemies of bacteria as an alternative to antibiotics. Phages have been fine-tuned by evolution to infect and kill specific bacteria, but the use of phages as an alternative to antibiotics comes with several key limitations. Here we will discuss some of these hurdles to phage therapy and how they can be addressed with genetic engineering.

Key Learning Points

1. Phage therapy is an alternative to antibiotics
2. Phages kill bacteria, but they also promote the evolution of their host
3. Phages can be engineered to be safer and more effective at killing bacteria

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Old Concepts, New Tricks: Phage Diagnostics and Therapy in the 21st Century

by **A/Prof Pablo Bifani**

Research Director, ID TRP, Department of Microbiology & Immunology,
NUS YLLSOM

We explore how environmental bacteriophages can be adapted for therapeutic and diagnostic purposes. Rapid diagnostic of infectious diseases and drug susceptibility testing is critical for adequate and timely treatment.

Here we discuss how phages can be adapted for diagnostics and drug susceptibility testing. These tests can be specific, fast and cheap alternatives to standard methods and amenable to point-of-care clinics or for use in resource limited settings. In contrast, phage therapy presents attractive alternatives for the treatment of otherwise incurable or difficult to treat infections due to drug resistance.

Key Learning Points

1. Adaptation of bacteriophage for therapeutic and diagnostic purposes
2. Potential for phage therapy are pathogen dependent
3. The use of recombinant phages

Identifying Antimicrobial Compounds Using Pathway-directed Screening

by **Dr Sham Lok To, Chris**

Assistant Professor, ID TRP, Department of Microbiology & Immunology,
NUS YLLSOM

Pathway-directed screening is a promising approach to discover antibiotics through genetic interactions. This approach has several advantages over traditional whole-cell and target-based screening.

For example, true hits can be easily distinguished from uninteresting, non-specific toxins that are commonly found in chemical libraries. I will talk about the recent advances in my research group in identifying inhibitors of capsule synthesis and a possible way to identify genetic interactions on a genome-wide scale.

Key Learning Points

1. Antibiotic resistance is a major public health threat
2. Genetic interactions can be exploited to discover novel antimicrobial compounds
3. A facile approach was developed to uncover genetic interactions that could be harnessed for designing new screens