



NCID MONTHLY RESEARCH MEETING

*BRINGING PEOPLE TOGETHER,
BRIDGING SCIENCE AND MEDICINE*

20 Oct 2023 | Friday | 11.00am – 12.30pm

About the Meeting

Our research meetings are held every third 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 Treatment of Serious Infections with Carbapenem Resistant Organisms

Prof David Paterson

Director, ADVANCE-ID
National University of Singapore



11:30 AM Materials for the Future

Prof Konstantin Sergeevich Novoselov

Director, Institute for Functional Intelligent Materials
National University of Singapore



12:00 PM Application of Physiologically-based Pharmacokinetic Modelling to Address Real-world Conundrum in Treatment of COVID-19 Using Paxlovid

Prof Eric Chan

Professor, Department of Pharmacy
National University of Singapore



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

To Register

Visit <https://for.sg/oct23researchmeeting> or scan QR code.

This will be a Zoom session.

*CME/CNE/CPE points will be awarded



Treatment of Serious Infections with Carbapenem Resistant Organisms

by **Prof David Paterson**

Director, ADVANCE-ID

National University of Singapore

Prof Paterson will be sharing on “Treatment of Serious Infections with Carbapenem Resistant Organisms” and the 3 learning points are:

1. Global “best practices” can not be applied to middle and low income settings across Asia.
 2. The role of combination therapy remains to be systematically explored.
 3. Innovative approaches to proving the value of new therapies need to be evaluated.
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Materials for the Future

by **Prof Konstantin Sergeevich Novoselov**

Director, Institute for Functional Intelligent Materials

National University of Singapore

Graphene and 2D materials, despite being relatively fresh materials, have already taken a firm place in research, development and applications. A number of exciting phenomena have been discovered in these crystals and they continue bringing exciting results on a regular basis. However, probably the most important characteristic about 2D materials is that they offer a possibility to form on-demand van der Waals heterostructures, where individual 2D crystals are stacked together, forming a novel, 3D structure, which composition (and thus, their properties) can be controlled with atomic precision. This have opened a new directions of research: materials on demand. The properties of the resulting heterostructure can be designed with very high precision. The space of parameters is so large that the use of machine learning methods becomes essential.

Furthermore, since individual components in such heterostructures interact through a number of channels (elastic, van der Waals, electronic, etc.) – a degenerate energy landscape is formed, leading to a number of competing phases, which opens a way to engineer particular phase transitions between different states and, thus, study also the out-of-equilibrium phenomena in such structures.

Application of Physiologically-based Pharmacokinetic Modelling to Address Real-world Conundrum in Treatment of COVID-19 Using Paxlovid

by **Prof Eric Chan**

Professor, Department of Pharmacy

National University of Singapore

In this talk, Professor Eric Chan will explain the real-world conundrum encountered in the treatment of COVID-19 using Paxlovid. The challenges included drug-drug interaction (DDI) and severe renal impairment implicating the efficacious and safe use of Paxlovid.

Three learning points:

1. Understand the conundrum implicated in the treatment of COVID-19 using Paxlovid.
2. Understand the basic concepts of physiologically-based pharmacokinetic (PBPK) modelling.
3. Appreciate the application of PBPK modelling in optimising the dosing of Paxlovid in DDI and severe renal impairment scenarios.