

# NCID MONTHLY RESEARCH MEETING

*BRINGING PEOPLE TOGETHER,  
BRIDGING SCIENCE AND MEDICINE*

**20 Jan 2023 | Friday | 11.00am – 12.00pm**

## About the Meeting

Our research meetings are held every 3<sup>rd</sup> 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 Population Dynamics of RNA Arthropod-borne Viruses in Experimental Evolution**

**Prof Marco Vignuzzi**

Senior Principal Investigator

A\*STAR Infectious Diseases Labs (ID Labs)



**11:30 AM Dengue and the Endothelial Glycocalyx**

**Dr Chia Po Ying**

Consultant

National Centre for Infectious Diseases /

Tan Tock Seng Hospital



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

## To Register

This will be a Zoom meeting.

Click <https://for.sg/jan23researchmeeting> or scan QR code.

\*CME/CNE/CPE points will be awarded



# Population Dynamics of RNA Arthropod-borne Viruses in Experimental Evolution

by **Prof Marco Vignuzzi**

Senior Principal Investigator

A\*STAR Infectious Diseases Labs (ID Labs)

RNA viruses are the fastest evolving organisms, with high mutation frequencies, small genomes, and fast replication rates. Despite their simplicity, they interact with each other through complementation and other collective behaviours in complex population dynamics. In this talk, I explore two aspects of social interactions and their influence on virus evolution, using two arthropod-borne viruses. The first part describes the role of defective viral genomes in interfering with infection or aiding viral evolution. In the second part, I re-explore the question of the arbovirus trade-off hypothesis that explains the low substitution rates of arboviruses in nature.

## Learning Points

1. Arboviruses evolve as complex populations.
  2. Genomes can both interfere or complement each other to influence the outcome of infection.
  3. Social behaviour within virus populations have implications for disease control.
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# Dengue and the Endothelial Glycocalyx

by **Dr Chia Po Ying**

Consultant

National Centre for Infectious Diseases / Tan Tock Seng Hospital

Dengue infection is one of the top ten global threats recognized by the World Health Organization in 2019. Disease caused by dengue virus can range from subclinical with no symptoms to life threatening disease. The main pathogenesis of severe dengue illness is vascular hyper permeability which can progress into shock, multi-organ failure, and death. We hypothesize that cardiac dysfunction also contributes to the development of shock. In this presentation, I will present the results of a prospective observational study of dengue patients and their cardiac function.

## Learning Points

1. Cardiac impairment is common in dengue patients.
2. Potential upstream mediators of dengue associated cardiac impairment include neutrophil mediators.
3. Single reading of soluble Suppression of Tumorigenicity 2 may be useful in prediction of severe dengue.