



VIRTUAL BIOLOGY COLLOQUIUM

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Hosted by A/P Cynthia He

Recent advances in antiviral strategies against medically important viruses



By Justin Chu

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Emerging and reemerging viral infections represent a major concern for human public health emergencies and there is an urgent need for the development of broad-spectrum antivirals and next generation vaccines.

By using integrated system-wide approaches including genome-wide gene silencing profiling, miRNA profiling and proteomics via high-throughput techniques, combined with bio-imaging and computational biology, we attempt to understand the biological complexity of virus-host interactions and translating it into antiviral strategies against these viral pathogens. To address the urgent need for treatment options, we have evaluated an array of antiviral strategies from high throughput screening of small molecule compound libraries for potential antivirals against these viruses, to the utilization of molecular intervention as well as the development of DNA launched replicon based vaccines. In vivo efficacy of these antiviral approaches are also illustrated with murine models established for these viral infections. In this talk, I will illustrate with the flavivirus Zika, Coronavirus COVID-19 and human enteroviruses. Together, these studies have provided the basis for the development of effective antiviral approaches that can be clinically validated as viable antiviral strategies against these medically important viral pathogens.

About the Speaker

Associate Professor Justin Chu is currently the Assistant Dean for Academic Affairs and a faculty member in the Department of Microbiology and Immunology, Yong Loo Lin School of Medicine, NUS. He is holding a Joint Senior Principal Investigator in IMCB, A*STAR. A/Prof Chu is also the Director of the Singapore largest research based high containment Biosafety Level 3 Facility in Singapore. A/Prof Chu is actively engaged in the study of the molecular biology of positive-sense RNA viruses. The outcome of these studies are helping to pave the roadmap towards the development of a number of antiviral strategies (antivirals, vaccines, therapeutics antibodies, molecular inhibitors) that are now undergoing clinical translational evaluation. Eight patents and numerous scientific awards have been received from his current research. A/Prof Chu has published over 100 international peer-reviewed scientific publications and book chapters. A number of these scientific papers are published in prestigious journals including Science, Lancet Infectious Diseases, Science Translational Medicine, Nature Communications and PNAS to name a few.

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