NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

BIOLOGY COLLOQUIUM

Friday, 3 Mar 2017 | 4pm | DBS Conference Room 1

Hosted by Dr Lin Qingsong

Controversies around artemisinins

About the Speaker:
Sanjeev Krishna is Professor of Molecular Parasitology and Medicine at St George's University of London. After completing a degree at Cambridge and medical degree at Oxford, he studied malaria in Thailand before completing a DPhil at the Weatherall Institute of Molecular Medicine in Oxford. A former Wellcome Trust Senior Research Fellow in Clinical Science, he joined St George's in 2000. He was elected a Fellow of the Academy of Medical Sciences in 2004 and was awarded an ScD by the University of Cambridge in 2007.

Professor Krishna maintains a wide-ranging programme of research at St George's University of London, spanning basic research into the function of Plasmodium transporters, translational studies on transporters as drug targets, and clinical studies to refine treatments for P. falciparum malaria and to better understand *P. knowlesi malaria*, a zoonotic form of malaria affecting parts of South-East Asia.

Over the past 30 years, Professor Krishna contributions include:

Artemisinin mechanisms of action: Identifying the SERCA/PfATP6 transporter as a target of the artemisinin antimalarial, and raising awareness of the potential for the development of artemisinin resistance.

Drug resistance: Identifying pfmdr1 copy number expansion as a predictor of treatment failure to commonly used antimalarial drugs.

Treatment: Leading clinical studies to establish optimal dosing regimes for artesunate and other antimalarial *treatments.*

New drug targets: Confirming the Plasmodium glucose transporter (PfHT) as a valid antimalarial drug target; compounds targeting PfHT are in preclinical development.

Pathophysiological studies: Establishing the importance of and mechanisms underlying lactic acidosis and hypoglycaemia in children with severe malaria, and exploring potential treatments

Diagnostics: Improving staging of second stage human African trypanosomiasis with neopterin as a biomarker Prof. Krishna advises FIND for new diagnostics for HAT and chairs QuantuMDX's Infectious Diseases Advisory Board



By Sanjeev Krishna

Professor of Molecular Parasitology and Medicine at St George's University of London, UK

Artemisinins are achieving growing importance in medicine that reaches beyond their essential contribution to antimalarial efficacy in combination therapies. Their discovery earned recognition through award of a Nobel prize. The mechanisms of action of artemisinins including the role of their unusual endoperoxide bridge remains unclear. In this talk, I review some of the history of discovery of artemisinins and some work that my group has been involved with on their mechanisms of actions. Newer findings will also be discussed, including observations on identification of artemisinin targets using labelling approaches. If discussing mechanisms of action of artemisinins is insufficiently controversial, I will also explore the term 'artemisinin resistance' and what its understanding contributes to that of treatment failures associated with artemisinin combination therapies. Finally, the use of artemisinins in the management of cancers will be outlined

Artwork by Ann Nee, DBS, NUS