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Innate defense mechanisms, cell death and survival, signaling and proliferation: The search for new anti-viral targets for influenza A virus

Sporadic outbreaks of epizootics like SARS *Coronavirus* and H5N1 avian influenza remind us of the potential for communicable diseases to quickly spread into worldwide epidemics. Despite improved surveillance and quarantine measures, we find ourselves under the threat of swine-flu, bird-flu and a pandemic at any time. Effective and new therapeutic targets are essential to protect against current and future pandemics and the best route to achieving this is through a detailed and global view of virus-host interactions. Here, we provide our perspective on the role of virus-host interactions in deepening our understanding of the scope for the discovery of new anti-viral targets. To prepare for future influenza outbreaks, it is necessary to understand how the virus interacts and manipulates the host pathways and to determine what makes certain strains of influenza highly pathogenic. Functional genomics provides a unique approach to this effort by allowing researchers to examine the effect of influenza infection on global host mRNA levels. Biological validation of such novel predictions and the use of screens to identify new virus-host interactions has been our approach to identifying potentially new anti-viral targets. We have deployed a variety of experimental systems that allow current models to be refined and thus provide us the basis for further predictions and hypothesis generation. By examining these changes in a comprehensive manner, we have been able to discover exciting new vision on strategies used by influenza viruses to overcome these cellular barriers.

Biography

Sunil K Lal has joined the School of Science, Monash University, Malaysia in 2014. He holds a PhD degree in Microbial Genetics from Georgia Institute of Technology, Atlanta, USA in 1989 following which he was appointed as Faculty at the California Institute of Technology, Pasadena, USA. In 1994 he has joined as a Senior Research Scientist at the International Centre for Genetic Engineering & Biotechnology (ICGEB), New Delhi where he worked for 22 years. He is internationally well known for his research work in the field of Tropical and Infectious Disease Biology. He has been a Visiting Scientist to Universiti Malaysia Sarawak, National University of Singapore, Karolinska Institute, Sweden and the Centers for Disease Control (CDC), Atlanta.

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