SIgN Immunology Seminar

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The Andes Virus Nucleocapsid Protein is a Novel Virulence Factor in Innate Immunity Evasion

Host
Dr Lisa Ng
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Date
Monday
2 June 2014

Time
11am – 12pm

Venue
SIgN Seminar Room
Immunos Building
Level 4
Biopolis

The Andes virus (ANDV) is the only known hantavirus strain able of person to person transmission, causing hantavirus pulmonary syndrome (HPS) with very high lethality (about 35%). Our studies revealed that ANDV nucleocapsid protein (N) uniquely inhibits the induction of IFNβ-, IFN-stimulated response element-, or κB- promoters mediated by pattern recognition receptors such as RIG-I and MDA5. In addition, ANDV N repressed RIG-I mediated induction of IFNβ mRNA. Further analysis demonstrated that ANDV N protein specifically inhibited IFN downstream pathway directed by MAVS, Tank-Binding Kinase 1 (TBK1), and IκB Kinase ε(IKKε). Conversely, ANDV N was unable to regulate signaling by IFNα or TNFα stimulators. Biochemical studies showed that expression of ANDV N blocks TBK1 mediated IRF3 phosphorylation of serine 396 and TBK1 auto-phosphorylation of serine 172.

In conclusion, we have characterized ANDV N as a novel virulence determinant regulating innate immune signaling. Such findings suggest that ANDV N may contribute for the enhanced ANDV replication and spread between human.