SIgN Immunology Seminar

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Regulatory mechanism of MAP kinase phosphatase 5 in innate immune response to influenza infection

Host
Dr Laurent Renia
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Date
Friday,
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Time
11am – 12pm

Venue
SIgN Seminar Room
Immunos Building
Level 4
Biopolis

MAP kinases are downstream targets of immune receptor signaling, having essential roles in both innate and adaptive immunity. The activation of MAP kinases in immune responses is tightly regulated by various mechanisms to ensure proper biological outcomes. One protein family known as MAP kinase phosphatases (MKPs) or dual specificity phosphatases (DUSPs) plays essential role in negative regulation of MAP kinase activation. Previously, we have shown that MAP kinase phosphatase 5 (MKP5), one member of MKP protein family, plays critical roles in both innate and adaptive immune responses. To further understand the function of this protein in immune responses to influenza, wild-type (WT) and MKP5 knockout (KO) mice were infected with A/Putero Rico/8/34 (PR8, H1N1) viruses. We found that viral titers in the lung of MKP5 KO mice are significantly lower on day 2, 3 and 5 post-infection than those in the lung of WT mice, which is associated with increased expression of type I IFN in the lung from KO mice. Both macrophages and dendritic cells from MKP5 KO mice produced significantly higher amount of IFN-alpha and IFN-beta in response to PR8 virus infection than WT cells. The increased expression of type I interferon in KO cells is associated with increased IRF3 activation compared with WT cells in response to influenza infection. The mechanisms by which MKP5 regulates IRF3 activation and type I interferon expression are further investigated and discussed.