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SIgN Immunology Seminar

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Innate lymphoid Cells and HIV Pathogenesis

Host
Dr Evan Newell
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Date
Thursday 26 February 2015

Time
11am – 12pm

Venue
SIgN Seminar Room
Immunos Building
Level 4
Biopolis

Innate Lymphoid Cells (ILCs) play a central role in the immune response to infection, through secretion of cytokines critical for immune regulation, tissue homeostasis and repair. The impact of HIV-1 infection on ILCs in blood and tissue compartments is unknown. We first observed that blood ILCs are severely depleted in viremic HIV-1 infection, but with the exception of ILC3s, remain at normal levels in antiretroviral therapy (ART)-naïve aviremic controllers. To further address their role in HIV pathogenesis, we studied ILC dynamics in subjects identified 5-14 days after infection. This unique data shows ILC depletion occurs very early in acute infection and does not recover following the resolution of peak viremia. Furthermore, the severe loss of ILCs in acute infection coincides with gut epithelial damage. ILC levels are not restored by ART initiated in chronic infection. However, ART started before peak viremia preserved normal levels of all ILC populations. We find evidence for ILC activation, tissue homing and reduced plasma IL-7 that may explain the depletion of ILCs. Finally, mucosal tissue from HIV-infected individuals indicates an impairment of cytokine production in resident ILC3 cells. These data provide the first link between ILCs and HIV-1 pathology, with potential for targeted treatment strategies.