Regulation of acute inflammation by memory CD4 T cells during IAV infection

It is generally accepted that the flow of immunologically relevant information during the early stages of responses against pathogens is one-way, - that inflammation induced upon pattern recognition by highly conserved receptors of the innate immune dramatically impacts subsequent antigen-specific T and B cell responses. We asked if the reverse occurs, and if cells of the adaptive immune system can influence the character and magnitude of innate inflammatory responses. We show here that resting, antigen-specific memory CD4 T cells can dramatically alter innate inflammatory responses within 36 hours of viral infection in a manner independent of other T cells and TLR signaling. Virus-specific memory CD4 T cells transferred to naive mice that are then challenged with influenza induce greater expression of multiple inflammatory mediators both at the site of infection and systemically upon cognate recognition of antigen in an IFN-γ-independent fashion. Our results show that the adaptive immune system can profoundly influence the character of inflammation following pathogen challenge, demonstrating a novel role for memory CD4 T cells in controlling virus titers during protective immune responses.

Biography
Tara M Strutt has received her PhD from the Department of Microbiology and Immunology at the University of Saskatchewan. Her studies focused on the signals required to activate CD4 T cells during immune responses. She continued to study CD4 T cells during her Postdoctoral studies at the Trudeau Institute in the laboratory of Dr. Susan L. Swain. While at the Trudeau Institute, she uncovered novel protective functions mediated by memory T cells during influenza virus infection and that different protective functions are mediated by memory cells in different organs. In 2010, she relocated to the University of Massachusetts Medical School as an Instructor, Faculty Member of the Department of Pathology. Her research focus centered on understanding how the tissue environment dictates T cell function and on defining how the adaptive immune system can control innate inflammatory responses. In 2015, she started her own independent research laboratory within the Immunity and Pathogenesis Division of the Burnett School of Biomedical Sciences in the College of Medicine at the University of Central Florida where she is continuing to study how adaptive immune responses regulate innate immunity.

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