PCI-16

Plasmacytoid dendritic cells are crucial for the initiation of inflammation and T cell immunity *in vivo*

Katsuaki Sato

Laboratory for Dendritic Cell Immunobiology, RIKEN Research Center for Allergy and Immunology, 1-7-22 Suehiro-cho, Tsurumi-ku, Yokohama, Kanagawa 230-0045, Japan, and RESTO, JST

Abstract

Plasmacytoid dendritic cells (pDCs) are characterized as type I IFN-producing cells (IPCs) by engagement of endosomal toll-like receptors (TLRs). pDCs are believed to provide an initial line of host defense against viral infection mainly mediated by the production of type I IFN. In addition, pDCs may act as antigen-presenting cells (APCs) to exert a pleiotropic activating or inhibitory role in the regulation of T cell-mediated adaptive immune responses. However, while in vitro and ex vivo observations have suggested such functions of pDCs, their precise role in vivo remains unclear. To clarify the role of pDCs for the control of immune response in vivo, we generated knock-in mice with the use of a diphtheria toxin receptor (DTR)-based approach targeting Siglec-H as a pDC-specific functional molecule that allows inducible in vivo selective ablation of pDCs. pDCs were required for inflammation triggered by a TLR ligand as well as bacterial and viral infections. pDCs controlled homeostasis of effector and regulatory $CD4^+$ T cells. Upon antigenic stimulation and microbial infection, pDCs suppressed the induction of $CD4^+$ T-cell responses and participated in the initiation of $CD8^+$ T-cell responses. Thus, our findings highlight previously unidentified roles of pDCs for the control of innate and adaptive immunity (Immunity, 35: 958-971, 2011).