TRIF regulates CXCR5+ T helper cells in the intestine

Establishing an effective humoral immunity is an important host defense mechanism in intestinal mucosa. T follicular helper (Tfh) cells are a spectrum of CXCR5 expressing T helper cells that induce antigen-specific B cell differentiation. Because the differentiation of T helper cells is largely regulated by innate immunity, we addressed whether TRIF signaling regulates Tfh cell differentiation and its ability to trigger humoral immune responses in the intestine. CD4+CXCR5+ T cells, B cells and plasma cells in the Peyer’s patches (PPs) of WT and TRIF-deficient (TrifLPS2) mice were analyzed by flow cytometry at the baseline, 9 days post primary infection and 7 days post secondary infection with Yersinia enterocolitica. At baseline, CD4+CXCR5+ T cell proportion was higher but the proportion of B cells and plasma cells was lower in the PPs of TrifLPS2 mice compared to WT mice. After infection, the proportion of plasma cells also became higher in the PPs of TrifLPS2 mice compared to WT mice. Corresponding increase of Y. enterocolitica-specific stool IgA but not serum IgG was found in TrifLPS2 mice compared to WT mice. Both in vivo isolated and in vitro generated Y. enterocolitica-specific CD4+CXCR5+ T cells induced protective immunity against Y. enterocolitica infection. Our results reveal a novel role of TRIF in the regulation of humoral immunity in the intestine that can be utilized as a basis for a unique vaccine strategy.

Biography
Masayuki Fukata is a Physician Scientist in the field of Gastroenterology and Mucosal Immunology. He has obtained his MD and PhD from the Jikei University School of Medicine in Tokyo, Japan and he was certified by Educational Commission for Foreign Medical Graduates (ECFMG) in the United States. He was trained in Clinical Gastroenterology at the Jikei University Hospital and completed his Postdoctoral training at the Cedars-Sinai Medical Center in LA as well as Mount Sinai School of Medicine in NY. He is currently a Faculty at the Division of Gastroenterology at Cedars-Sinai and Assistant Professor of Medicine at the University of California Los Angeles, USA.

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