

International Symposium 2-3**Intestinal homeostasis maintained by subepithelial mesenchymal cell**

○ Shinichiro Sawa^{1, 2}, Eriko Sumiya¹ and Kazuki Nagashima³

¹Division of Developmental Immunology, Institute for Genetic Medicine, Hokkaido University,

²Japan Agency for Medical Research and Development, Advanced Research & Development Programs for Medical Innovation (AMED-PRIME),

³Department of Bioengineering, Stanford University, California, USA

Immunoglobulin A (IgA) maintains a symbiotic equilibrium with intestinal microbes. IgA induction in the gut-associated lymphoid tissue (GALT) is dependent on microbial sampling and cellular interaction in the subepithelial dome (SED). Recently, we identified RANKL-expressing mesenchymal cells which directly interacted with the gut epithelium to control microfold (M) cell differentiation and regulated IgA production in the gut (1, 2). This SED-resident RANKL⁺ mesenchymal cell, termed M cell inducer (MCi) cell has a fundamental role in the maintenance of intestinal immune homeostasis. However, it is still unclear when and where MCi cells originate. In this symposium, we will introduce our trial to chase fates of MCi cells in vivo using unique mouse model.(3)

[References]

- (1) Nagashima K, Sawa S, Nitta T, Tsutsumi M, Okamura T, Peninger JM, Nakashima T and Takayanagi H. Identification of subepithelial mesenchymal cells that induce IgA and diversify gut microbiota. *Nat Immunol.*, 18: 675-682 (2017).
- (2) Nagashima K, Sawa S, Nitta T, Prados A, Koliaraki V, Kollias G, Nakashima T and Takayanagi H. Targeted deletion of RANKL in M cell inducer cells by the Col6a1-Cre driver. *Biochem Biophys Res Commun.*, 493: 437-443 (2017).
- (3) Sawa S, Cherrier M, Lochner M, Satoh-Takayama N, Fehling HJ, Langa F, Di Santo JP, and Eberl G. Lineage relationship analysis of ROR γ ⁺ Innate Lymphoid Cells. *Science*, 330: 665-669 (2010).