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Commensal bacteria and diet in the control of intestinal immunosurveillance and diseases

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Accumulating evidence has demonstrated that stimulation by commensal bacteria is essential for the development, maintenance, and regulation of intestinal immune responses. Additionally, nutritional molecules (e.g., vitamins and lipids) derived from both diets and commensal bacteria are involved in the regulation of intestinal immunity. Thus, germ-free condition or nutritional deficiencies lead to the impaired host immune responses. In this talk, I would like to show our recent findings on the immune regulation pathways mediated by commensal bacteria and dietary materials.

We recently identify a new subset of intestinal IgA-producing plasma cells, which require the lymphoid structure of Peyer's patches and stimulation by commensal bacteria, and produce large amounts of IgA. These features allow CD11b⁺ IgA plasma cells to mediate early-phase of antigen-specific intestinal IgA responses against orally administered protein antigen. We also identified *Alcaligenes* inside the Peyer's patches as stimulant commensal bacteria for the intestinal IgA production and subsequent study revealed that aberrant localization of *Alcaligenes* initiated the development of inflammatory diseases. I also would like to show our recent finding on in the maintenance of immunological homeostasis mediated by vitamin families.

[References]

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