

Immunology

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The immune system plays a crucial role in protecting our body from invading pathogens and foreign substances, while its dysregulation or malfunction causes various diseases such as allergy, autoimmune diseases, and cancers. The main purpose of our research is elucidating how immune responses are controlled in secondary lymphoid organs/tissues (SLOs), including lymph nodes, spleen, and mucosal-associated lymphoid tissues, especially focusing on the dynamic interaction between immune cells and non-hematopoietic stromal cells within a complicated three-dimensional tissue microenvironment.



Research interests

1. Structure and function of secondary lymphoid organs
2. Characteristics and functional roles of non-hematopoietic stromal cells
3. Molecular interaction of immune cells and stromal cells
4. Dynamic regulation of Immune cell behaviors in tissue microenvironment

Materials and methods for collaborations

1. Confocal microscopy of secondary lymphoid organs using immune-stained section, whole-mount staining, or tissue clearing.
2. Two-photon microscopy-based live imaging of immune cell dynamics in lymph node explants and tissue slices.
3. Flowcytometry and cell sorting of immune cells and stromal cells.
4. Lymph node-derived stromal cell lines for *in vitro* analysis.

Links to additional info

1. Takeuchi A, et al. A distinct subset of fibroblastic stromal cells constitutes the cortex-medulla boundary subcompartment of the lymph node. **Front Immunol.** 9:Article 2196, 2018.
<https://www.frontiersin.org/articles/10.3389/fimmu.2018.02196/full>
2. Bogdanova D, et al. Essential role of canonical NF- κ B activity in the development of stromal cell subsets in secondary lymphoid organs. **J Immunol.** 201:3580-3586. 2018.
<https://www.jimmunol.org/content/201/12/3580.long>
3. Katakai T and Kinashi T. Microenvironmental control of high-speed interstitial T cell migration in the lymph node. **Front Immunol.** 7:Article 194, 2016.
<https://www.frontiersin.org/articles/10.3389/fimmu.2016.00194/full>
4. Lab HP (Japanese). <https://www.med.niigata-u.ac.jp/zoo/welcome.html>