Immune Regulation

1. Staffs and Students (April, 2009)

Professor	Hajime KARASUYAMA	
Associate Professor	Yoshiyuki MINEGISHI	
Assistant Professor	Yohei KAWANO	
Assistant Professor	Shingo SATO	
Technical Official	Toshiyuki KOJIMA	
JSPS Research Fellows	Kaori MUKAI,	Kazushige OBATA
Medical Fellow	Soichiro YOSHIKAWA	
Graduate Students	Takeshi WADA,	Hideto NISHIKADO,
	Hiromi OGAWA,	Ryosuke ISHIKAWA,
	Masako SAITO,	Hirofumi YAMAGISHI,
	Mayumi EGAWA	

2. Purpose of Education

Main objective of the immunology course for undergraduate students is to provide them the basic ideas how the immune system works and is regulated in various physiological and pathological settings including infections, cancer, autoimmune and allergic disorders, and organ transplantation. In the immunology course for graduate students, they study molecular mechanisms underlying the lymphocyte differentiation and the development of immune disorders such as allergy and primary immunodeficiency, by employing advanced technology in molecular biology, biochemistry, cellular biology and developmental engineering.

3. Research Subjects

1) Molecular basis of allergy: Basophil biology and pathology.
2) Genetic and molecular studies on the pathogenesis of primary immunodeficiencies.
3) Regulation of B cell development

4. Publications

Original Articles

1. Hida, S., Yamasaki, S., Sakamoto, Y., Takamoto, M., Obata, K., Takai, T., Karasuyama, H., Sugane, K., Saito, T. and Taki, S.: Fc receptor γ-chain, a constitutive component of the interleukin 3 receptor is required for interleukin 3-induced interleukin 4. *Nat. Immunol.* 10: 214-222, 2009.
2. Yoshikawa, S., Kawano, Y., Minegishi, Y. and Karasuyama, H.: The skewed heavy-chain repertoire in peritoneal B-1 cells is predetermined by the selection via pre-B cell receptor during B cell ontogeny in the fetal liver. *Int. Immunol.* 21: 43-52, 2009.
3. Khodoun, M., Strait, R., Orekov, T., Hogan, S., Karasuyama, H., Herbert, D. R., Köhl, J. and Finkelman, F. D.: Peanuts can contribute to anaphylactic shock by activating complement. *J. Allergy Clin. Immunol.* 58: 11-19, 2009.
4. Belkina, N. V., Lie, Y., Hao, J-J., Karasuyama, H. and Shaw, S.: LOK is a major ERM kinase in resting lymphocytes and regulates cytoskeletal rearrangement through ERM phosphorylation. *Proc. Natl. Acad. Sci. USA.* 106: 4707-4712, 2009.
5. Minegishi, Y., Saito, M., Nagasawa, M., Takada, H., Hara, T., Tsuchiya, S., Agematsu, K., Yamada, M., Kawamura, N., Ariga, T., Tsuge, I., and Karasuyama, H.: Molecular explanation for the contradiction between systemic Th17 defect and localized bacterial infection in hyper-IgE syndrome. *J. Exp. Med.* 206: 1291-1301, 2009.
6. Ugajin, T., Kojima, T., Mukai, K., Obata K., Kawano, Y., Minegishi, Y., Eishi Y., Yokozeki, H., and Karasuyama, H.: Basophils preferentially express mouse mast cell protease 11 among the mast cell tryptase family in contrast to mast cells. *J. Leukoc. Biol.* 86: 1417-1425, 2009.

Review Articles

1. Karasuyama, H., Mukai, K., Tsujimura, Y. and Obata, K.: Newly-discovered roles for basophils: a neglected minority gains new respect. *Nat. Rev. Immunol.* 9: 9-13, 2009.
2. Mukai, K., Obata, K., Tsujimura, Y. and Karasuyama, H.: New insights into the roles for basophils in acute and chronic allergy. *Allergol. Int.* 58: 11-19, 2009.

3. Minegishi, Y. and Karasuyama, H.: Defects in Jak–STAT-mediated cytokine signals cause hyper-IgE syndrome: lessons from a primary human immunodeficiency. *Int. Immunol.* 21: 105-112, 2009.
4. Takai, T., and Karasuyama, H.: The study of allergy by Japanese researchers: a historical perspective. *Int. Immunol.* 21: 1311-1316, 2009.
5. Minegishi, Y.: Hyper-IgE syndrome. *Curr. Opin. Immunol.* 21, 487-492, 2009.