

Immune Regulation

1. Staffs and Students (April, 2010)

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Graduate Students	Hideto NISHIKADO,	Masako SAITO,
	Ryosuke ISHIKAWA,	Hiromi OGAWA,
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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. Nakata, K., Kobayashi, K., Ishikawa, Y., Yamamoto, M., Funada, Y., Kotani, Y., Blumberg, R.S., Karasuyama, H., Yoshida, M., and Yoshihiro Nishimura.: The transfer of maternal antigen-specific IgG regulates the development of allergic airway inflammation early in life in an FcRn-dependent manner. ***Biochem. Biophys. Res. Commun.*** 395:238-243, 2010.
2. Wada, T., Ishiwata, K., Koseki, H., Ishikura, T., Ugajin, T., Ohnuma, N., Obata, K., Ishikawa, R., Yoshikawa, S., Mukai, K., Kawano, Y., Minegishi, Y., Yokozeki, H., Watanabe, N., and Karasuyama, H.: Selective ablation of basophils in mice reveals their nonredundant role in acquired immunity against ticks. ***J. Clin. Invest.*** 120: 2867-2875, 2010.
3. Matsushima, Y., Kikkawa, Y., Takada, T., Matsuoka, K., Seki, Y., Yoshida, H., Minegishi, Y., Karasuyama, H., and Yonekawa, H.: An atopic dermatitis-like skin disease with hyper-IgEemia develops in mice carrying a spontaneous recessive point mutation in the Traf3ip2 (Act1/CIKS) gene. ***J. Immunol.*** 185: 2340-2349, 2010.
4. Anyan, W.K., Kumagai, T., Simogawara, R.F., Seki, T., Akao, N., Obata, K., Kwansa-Bentum, B., Bosompem, K.M., Boakye, D.A., Wilson, M.D., Karasuyama, H., and Ohta, N.: Schistosoma eggs have a direct role in the induction of basophils capable of a high level of IL-4 production: Comparative study of single- and bisexual infection of *Schistosoma mansoni* in vivo. ***Trop. Med. Health*** 38: 13-22, 2010.
5. Torrero, M.N., Hubner, M.P., Larson, D., Karasuyama, H., and Mitre, E.: Basophils amplify type 2 immune responses, but do not serve a protective role, during chronic infection of mice with the filarial nematode *Litomosoides sigmodontis*. ***J. Immunol.*** 185: 7426-7434, 2010.
6. Ishikawa, R., Tsujimura, Y., Obata, K., Kawano, Y., Minegishi, Y., and Karasuyama, H.: IgG-mediated systemic anaphylaxis to protein antigen can be induced even under conditions of limited amounts of antibody and antigen. ***Biochem. Biophys. Res. Commun.*** 402: 742-746, 2010.

Review Articles

1. Karasuyama, H., Tsujimura, Y., Obata, K., and Mukai, K.: Role for basophils in systemic anaphylaxis. ***Chem.***

- Immunol. Allergy*. 95: 85-97, 2010.
2. Karasuyama, H., Mukai, K., Obata, K., Tsujimura, Y., Kawano, Y., and Minegishi, Y.: Nonredundant roles for basophils in immediate- and delayed-onset allergic reactions. *The Open Allergy Journal*. 3: 73-80, 2010.
 3. Karasuyama, H., Tsujimura Y., Obata, K., Mukai, K., and Minegishi Y.: Basophils and mast cells play distinct roles in acute and chronic allergic reactions. *Environmental and genetic factors in allergy and clinical immunology*. (Eds.: van Ree, R., Ring, J., and Marone, G) pp63-65, 2010.
 4. Karasuyama, H., Mukai, K., Obata, K., Tsujimura, Y., and Wada, T.: Nonredundant roles of basophils in immunity. *Annu. Rev. Immunol.* 29: 45-69, 2011 (Online publication 2010 Dec.).
 5. Karasuyama, H., Wada, T., Yoshikawa, S., and Obata, K.: Emerging roles of basophils in protective immunity against parasites. *Trends Immunol.* in press (Online publication 2010 Dec.).