生体防御にも免疫病発症にも関与する
“両刃の剣・免疫”の分子基盤と作用機序を究める

research projects

We are surrounded by continuous external threats from pathogens such as bacteria and viruses, but we have powerful defense mechanisms, “immunity”. Our immune system prevents them from causing disease. And it also can protect us against internal threats such as cancers. However, immune system poses a risk if the activation is too excessive, or if molecules inside the body active the immune system, autoimmune diseases, allergy, or inflammation may follow. Therefore, it is important to clarify how “the good and bad aspects of immunity” is controlled for the development of therapeutic strategies.

B cells play a central role in humoral immunity and differentiate into antibody-secreting plasma cells or become memory B cells, which are protective against infection. On the other hand, in the context of autoimmune allergies, or inflammatory diseases, B cells are considered to be pathogenic effectors. But, recent findings indicate that B cells have suppressive functions in a variety of pathogenic disorders. The B cell subset with regulatory properties, termed “regulatory B cells” negatively controls immune reaction. We are trying to uncover the molecular mechanism of the bilateral action of B cells underlying infection and intractable diseases including inflammation, autoimmunity, allergy and cancer. Particularly, we focus on the following projects using several disease model and human samples.

1. Understanding of differentiation process in the life of B cells.
2. Clarification of the mechanisms that generate useful and harmful antibodies.
3. Understanding how B cells positively or negatively regulate immune responses and disorders.

major recent publications