

Mechanism for regulation of innate immune responses

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【Outline of survey】

Immunity is responsible for host defense against pathogens, however, when its regulatory mechanisms are disturbed, it causes immune disorders. Mechanisms for the outbreak of the immune disorders have been investigated focusing on adaptive immunity, but pathogenesis of many immune disorders remains unclear. The molecular mechanisms how innate immunity is activated have recently been revealed, and further innate immunity has been shown to regulate activation of adaptive immunity. In addition, accumulating evidence demonstrates that dysregulation of innate immune responses causes immune disorders such as chronic inflammatory bowel diseases. In this project, we will probe how innate immunity mediates subsequent activation of adaptive immunity using several infectious models in mice with defective innate immune responses. Through these analyses, we will try to understand immune responses comprehensively. Then, We will probe regulatory mechanisms for innate immune responses targeting nuclear I_kB proteins. Then, we will try to provide molecular basis to unveil pathogenesis and treatment of inflammatory bowel diseases.

【Expected results】

By analysis of molecular mechanisms for activation of innate and adaptive immunity, we will be able to understand immune responses comprehensively. By analysis of regulatory mechanisms of innate immune responses, we will be able to establish technique to regulate innate immune responses.

These achievements, all together, will lead to understanding of pathogenesis of immune disorders caused by abnormal innate immune responses, and further establishment of a remarkable method to treat these diseases.

【References】

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- Akira, S., and Takeda, K.: Toll-like receptor signaling. *Nat. Rev. Immunol.* 4, 499-511 (2004).

【Term of project】 FY2007 - 2011

【Budget allocation】 17,600,000 yen
(2007 direct cost)

【Homepage address】

<http://www.med.osaka-u.ac.jp/pub/ongene/index.html>