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Nucleic acid sensors activating innate immune responses

Pattern Recognition Receptors (PRRs) trigger innate immune responses such as a variety of cytokine induction, through their recognition of microbe/pathogen-associated molecular patterns (MAMPs/PAMPs). In particular, during viral infection, virus-derived nucleic acids are mainly targeted by certain PRRs including TLR3/7/8/9, RIG-I, MDA5, cGAS and so on. This leads to activation of the downstream signalings for the induction of innate cytokines such as type I interferons (IFNs), which confers antiviral activities to the cell. On the other hand, it has been shown that these nucleic acid sensors also detect host-derived nucleic acids during DNA damage induced by radiation and chemotherapy, etc., which may cause inflammatory responses. I am going to talk about our recent data regarding a regulatory mechanism for activation of cytoplasmic nucleic acid sensor-mediated signalings during viral infection and DNA damage.

Biography

Akinori Takaoka, M.D., Ph.D. graduated from Sapporo Medical University, School of Medicine in 1992, and gained his Ph.D. and M.D. at the same university in 1996. He worked as a post-doctoral fellow and a Research Associate at the Department of Immunology, Graduate School of Medicine & Faculty of Medicine, at University of Tokyo. In this department he was Appointed as an Assistant Professor in 2000 and Lecturer in 2002. Then, he was appointed in a current position to start a new laboratory at Hokkaido University in 2007.

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