

Regulation of inflammation and oncogenesis by the IRF family transcription factors

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The interferon-regulatory factor (IRF) family, consisting of nine members in mammals, was originally identified as transcriptional regulators of the type I interferon (IFN) system. Since then, a plethora of studies has revealed the versatile and critical functions performed by this transcription factor family in immunity and other biological processes. Perhaps most notably, the advances made in the immunobiology of signal transducing innate immune receptors have placed several IRFs as central mediators for the evocation of innate immune responses that dictate adaptive immune responses. Over the last few decades, the role of several IRF family members in cellular responses involved in the development of cancers has also gained much attention. Indeed, the role of several IRF family members in the regulation oncogenic processes has important implications for understanding susceptibility to and progression of several cancers as well as the potential for therapeutic intervention. I summarize our current understanding of IRFs in the regulation of cellular responses linked to inflammation and oncogenesis, including our recent work on IRF5. Finally, although not extensively touched upon in this talk, all IRFs may also play a crucial role, albeit indirectly, in the regulation of oncogenesis since they are critical for the development and/or function of the cells involved in anti-tumor immune responses.

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EDUCATIONS/TRAINING

- 1971: B.S. in Biology, Tokyo University of Education, Tokyo, Japan
1978: Ph.D. in Molecular Biology, University of Zurich, Zurich, Switzerland

POSITIONS AND HONORS

- 1978-1983: Member and Associate Member, Department of Biochemistry, Cancer Institute, Japanese Foundation for Cancer Research
1983-1984: Member and Chief, Department of Biochemistry, Cancer Institute, Japanese Foundation for Cancer Research
1984-1994: Professor, Division of Molecular Biology, Institute for Molecular and Cellular Biology, Osaka University
1995-2012: Professor, Department of Immunology, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo
2006 to present: Adjunct Professor, New York University School of Medicine, U.S.A.

2003: Foreign Associate Member, National Academy of Sciences, U.S.A.
1988: The Milstein Award (International Society of Interferon Research)
1991: Robert-Koch Prize (Germany)
1997: Keio Medical Science Prize
2000: Japan Academy Prize
2006: The Pezcoller Foundation-American Association for Cancer Research International Award for Cancer Research (Italy and U.S.A.)
2009: Person of Cultural Merit (Government of Japan)

RECENT PUBLICATIONS

1. Negishi H, Yanai H, Nakajima A, Koshiba R, Atarashi K, Matsuda A, Matsuki K, Miki S, Doi T, Aderem A, Nishio J, Smale ST, Honda K, Taniguchi T. ; Cross-interference of RLR and TLR signaling pathways modulates antibacterial T cell responses. (2012) *Nature Immunol.* 13, 659-666.
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4. Tamura, T., Yanai, H., Savitsky, D., and Taniguchi, T.; The IRF Family Transcription Factors in Immunity and Oncogenesis. (2008) *Annu. Rev. Immunol.*, 26, 535-584.
5. Yanai, H., Chen, H., Inuzuka, T., Kondo, S., Mak, W. T., Takaoka, A., Honda, K. and Taniguchi, T.; Role of IFN regulatory factor 5 transcription factor in antiviral immunity and tumor suppression. (2007). *Proc. Natl. Acad. Sci. USA.*, 104, 3402-3407.
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