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## Identification of a Common Immune Regulator in Both Innate and Adaptive Immune Responses

*- The innate immune signaling molecule regulates acquired immune system through T cell activation. -*

Our body is protected against external pathogens such as harmful microorganisms and viruses by immune response. Do you know there are two immune systems, named innate immunity and adaptive immunity? Innate immune system responds to external pathogens by direct recognition of their molecular structures. On the other hand, adaptive immune system uses T cells for recognition and defense against any external pathogens.

Laboratory for Cell Signaling in RIKEN Research Center for Allergy and Immunology identified IRAK-4 as an essential immune regulatory molecule in both of these two systems. This finding suggests that the adaptive immune system would have utilized a useful molecule in innate immune system for its signal transduction during evolution.

In this context, IRAK-4 or IRAK-4-like molecules, that are evolutionary conserved between the two systems, might be the potent targets for the development of immune-response-based drugs because inhibitors of these molecules would be effective against both innate and acquired immune systems. These potential drugs would be effective to infectious diseases, cancers, allergic diseases, medical transplantation, and so on.

The research details are reported in the reference: *Science*. 2006 Mar 31; 311(5769):1927-32.



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