National Jewish Health
Breathing Science is Life.

Ross M. Kedl, PhD

Conditions Treated:

Research Areas:

- *Cancer*
- *Basic Immunology*
- *Innate Immunity*

Research Interests

Innate Immunity and Cancer Immunology The laboratory is investigating how Toll Like Receptors (TLRs) generate innate immunity and how the nature of the innate response effects the generation of downstream adaptive immunity. Much effort has gone into determining the minimal requirements and molecular pathways involved in creating the appropriate immunogenic context of antigen presentation. Since the time of Jenner (Edward, not Bruce) it has been recognized that the presentation of antigens in the context of a microbial or viral infection is potently immunogenic. It was later observed that this immunogenic activity can often be localized to the infectious material itself rather than the process of infection, eg. complete Freunds adjuvant and Coley's toxin.

We now know that a good deal of this immunogenic activity is due to various microbial and viral products interacting with a family of mammalian molecules called Toll-like receptors (TLR) expressed predominantly on cells of the innate immune system. The involvement of TLRs in immunity is at least two fold, first as direct activators of innate immunity and second as initiators of adaptive immunity. TLR stimulation induces immediate innate effector functions and also creates the necessary conditions for the initiation of adaptive immunity. A dual role of TLRs in both innate and adaptive immunity has been confirmed in mice with genetic deletions of TLRs or TLR signaling molecules. Generally, mice with such deletions induce innate immunity less efficiently and have lower T and B cell responses to infection or vaccination than their wild type littermates.

Education

1988 - 1992 College of Biological Science, University of Minnesota (St. Paul, MN), BS, Biology
1993 - 1997 University of Minnesota Medical School (Minneapolis, MN), PhD, Pathobiology

Fellowship

1997 - 2001 Laboratory of John Kappler and Philippa Marrack, Howard Hughes Medical Institute, National Jewish Health,

Teaching or Professional Positions

2001-2004: Senior Immunologist, 3M Pharmaceuticals, 3M Center, 270-2S-06 (St. Paul, MN)
2002-2004: Adjunct Assistant Professor, University of Minnesota, Department of Lab Medicine and Pathology (Minneapolis, MN)

Affiliations with the University of Colorado Denver

Faculty Member, University of Colorado Denver

Professional Memberships

AAI

Publications

Catherine Haluszczak, Adovi D. Akue, Sara E. Hamilton, Lindsey Pujanauski, Lenka Teodorovic, Lisa D.S. Johnson, Stephen C. Jameson, and Ross M. Kedl. The naive antigen-specific CD8+ T cell repertoire contains memory phenotype cells that bear the signature of homeostatic expansion. 2008 206(2):435.

Phillip J. Sanchez, Catherine Haluszczak, Hideo Yagita, and Ross M. Kedl. Combined-TLR/CD40 Stimulation Mediates Potent Cellular Immunity by Regulating Dendritic Cell Expression of CD70 In Vivo. 2007 Journal of Immunology, 178:1564-1572.

Cory Ahonen, Christie L. Doxsee, Sean McGurran, Tony R. Riter, Randolph J. Noelle and Ross M. Kedl. Combined TLR and CD40 Triggering Induces Potent CD8+ T Cell Expansion with Variable Dependence on Type I IFN. 2004 Journal of Experimental Medicine 199: 775–784.

Ross M. Kedl, Brian C. Schaefer, John W. Kappler, and Philippa Marrack. T cells down-modulate antigen/MHC complexes on antigen presenting cells in vivo. 2002 Nature Immunology 3(1):27-32.

Ross M. Kedl, William A. Rees, David A. Hildeman, Brian Schaefer, John Kappler, and Philippa Marrack. T cells compete for access to antigen bearing antigen presenting cells. Journal of Experimental Medicine, 192(8):1105-1113 2000.

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