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## **The T-cell immunoglobulin and mucin domain (Tim) gene family in asthma, allergy, and autoimmunity.**

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### **Abstract**

The T-cell immunoglobulin and mucin domain (Tim) gene family is a relatively newly discovered group of molecules with a conserved structure and important immunologic functions. Tim molecules express on many types of immune cells including T cells, B cells, dendritic cells, macrophages, and mast cells that have been shown to be involved in asthma, allergic rhinitis, food allergy, and autoimmunity. Tim-1-Tim-4 interaction promotes Th2 cytokine responses, and blocking this interaction can decrease airway inflammation in asthma and in allergic rhinitis. Tim-3 stimulates mast cells to produce Th2 cytokines, and anti-Tim-3 is able to dampen asthmatic inflammation. The Tim-3 ligand was shown to be greatly enhanced on intestinal epithelial cells in patients with food allergy and Tim-4 may play a role in maintaining oral tolerance and prevention of food allergy. Tim-3 deregulation plays a role in the pathogenesis of multiple sclerosis. Increased Tim-1 expression has been shown in mononuclear cells from systemic lupus erythematosus patients and Tim-3 may be involved in a protective role in rheumatoid arthritis.

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