

[S2-1] [4/17/2003(Thur) 14:00-14:40/Maple Hall]

**Aminoacyl-tRNA Synthetase Cofactor, p43, is a Novel Cytokine  
and an Immune Modulator: Implications for  
Autoimmune Diseases and Bacterial Infections**

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p43 is a protein with complex biological activities. It is first found as a protein associated with macromolecular tRNA synthetase complex. Within this complex, p43 specifically interacts with arginyl-tRNA synthetase to help the substrate tRNA binding to the enzyme. It is also necessary for the cellular stability of arginyl-tRNA synthetase and the molecular association of a few complex-forming tRNA synthetases. It is also located in endoplasmic reticulum to hold heat shock protein, gp96 that works as immune alert when secreted to extracellular matrix or exposed on the cell surface. The p43-deficient mice showed increased surface presentation of gp96 leading to the hyperactivation of dendritic cells that eventually causes the syndrome of autoimmune disease such as glomerula nephritis, inflammatory infiltrations in many different organs and accumulation of autoantibodies. p43 is also secreted from the cells and trigger pro-inflammatory responses such as the induction of TNF and other cytokines and chemokines. Thus, p43 appears to work in dual mode in immune system. It is an immune suppressor when it is present in the cells by suppressing the surface exposure of gp96. However, it boosts immune system along with gp96 when it is secreted from the cells upon the conditions like bacterial infection.