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Structural and functional mechanisms of the interleukin-7 signaling pathway

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The interleukin-7 (IL-7) signaling pathway is paramount in the development and homeostasis of B- and T-cells in the immune system. Under- and over-stimulation of the IL-7 signaling pathway has been implicated in the pathogenesis of a form of severe combined immunodeficiency, autoimmune conditions, and several cancers. The interleukin-7 pathway is activated upon the association of IL-7 with two cellular receptors: IL-7R (CD127) and the shared common gamma-chain (CD132). The shared common gamma-chain is the activating receptor for IL-2, -4, -7, -9, -15, and -21. We have determined the structures of IL-7 to glycoforms of the IL-7R extracellular domain and also the unliganded IL-7R. We will present structural and functional mechanisms of how the IL-7 signaling pathway differs from the common gamma-chain family members. This research is supported by grant AI72142 from the National Institutes of Health.

Biography

Scott Walsh completed his Ph.D. under the guidance of Dr. William DeGrado at the University of Pennsylvania and pursued postdoctoral studies under the guidance of Dr. Anthony Kossiakoff at the University of Chicago. From 2003 to 2008, he was a professor at the Ohio State University School of Medicine. From 2008 to the present, he is a professor at the University of Maryland.

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