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## Small molecule inhibitors targeting the Th17 cell transcription factor RORγt for the treatment of autoimmune diseases

CD4$^+$ Th17 cells, which are characterized by the expression of IL-17A, IL-17F, IL-22, IL-23R and CCR6, have been shown to play a critical role in a variety of autoimmune diseases including rheumatoid arthritis, multiple sclerosis, psoriasis, inflammatory bowel disease, and asthma. IL-23 is critical for the differentiation of Th17 cells *in vivo*. Genome-wide association studies have demonstrated that *Il23r* polymorphisms are associated with several autoimmune diseases. Further, monoclonal antibodies against IL-12/IL-23p40 or IL-23p19 have shown spectacular efficacy in psoriasis patients. However, these antibodies target only a single cytokine and have limited efficacy in other autoimmune diseases.Thus, targeting Th17 lineage should result in better efficacy. The nuclear receptor RORγt has been shown to be the master transcription factor for the differentiation of Th17 cells as well as the expression of Th17 signature genes. We and several academic labs have discovered small molecule inhibitors of RORγt for the treatment of various diseases. The biology of RORγt has been extensively studied using RORγt small molecule inhibitors as tool compounds. The very recently advance of RORγt biology and its clinical application will be discussed.

### Biography

Jianfei Yang is a Principal Scientist and a Project Leader of a Th17 cell-related project at Tempero Pharmaceuticals, a GSK company, in Cambridge, MA, USA. He received a Ph.D. in Pathology from Niigata University in Japan in 1997. He then obtained postdoctoral training in Dr. Ken Murphy's lab at HHMI and Washington University. In the past 16 year, he has been studying the role of CD4$^+$ T helper cells in immunity and diseases. He has more than 10 years of experience in autoimmune disease research and pharmaceutical drug development. He has published numerous papers and patents.

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