

STAT4

Signal Transducer and Activator of Transcription 4

human, recombinant, Sf9 insect cells

Cat. No.	Amount
PR-864	10 μ g

For *in vitro* use only
Quality guaranteed for 12 months
Store at -80°C

Avoid freeze / thaw cycles

Form

Liquid. Supplied in 20 mM Tris-HCl pH 8.0, 20% glycerol, 100 mM KCl, 0.2 mM EDTA and 1 mM DTT.

Activity

1 ng is the amount sufficient for a gel mobility shift assay in a 20 μ l reaction, 100 ng are sufficient for a protein-protein interaction assay detected by immuno-blot system.

Application

STAT4 can be used for gel mobility shift assays, for protein-protein and small molecules-protein interaction assays.

Purity

> 95% by SDS-PAGE

Description

STAT proteins have the dual function of signal transduction and activation of transcription. These proteins are activated by phosphorylation on tyrosine in response to different ligands after which they form homodimers or heterodimers that translocate to the cell nucleus where they either directly bind to DNA or act together with other DNA-binding proteins in multiprotein transcription complexes to direct transcription. STAT4 is phosphorylated in response to interleukin-12 and is essential for IL12 signal transduction. STAT4 is expressed in specific tissues, including spleen, heart, brain, peripheral blood cells, and testis. Cell-mediated immunity is dependent on IL12 production by macrophages and dendritic cells, which in turn stimulates IFNG (147570) secretion by natural killer cells and leads to Th1 cell activation. Intestinal T cells from Crohn disease patients, but not healthy volunteers, showed constitutive activation of STAT3 and STAT4, suggesting that there is abnormal STAT/SOCS signaling in Crohn disease. The N-terminal protein interaction domain (N domain) of STAT4 is required for STAT4 activation after IL12 signaling. Mutations in the N domain of STAT4 block N-domain dimerization and the assembly of nonphosphorylated STAT4 dimers and prevent STAT4 phosphorylation by cytokine receptors. N-domain dimerization was observed for other STAT family members, but was homotypic in character. It is proposed that the preassociation of non-phosphorylated STAT dimers may allow the formation of active dimers after activation.

Selected References:

- Ota *et al.* (2004) N-domain-dependent nonphosphorylated STAT4 dimers required for cytokine-driven activation. *Nature Immun.* **5**:208.
Lovato *et al.* (2003) Constitutive STAT3 activation in intestinal T cells from patients with Crohn's disease. *J. Biol. Chem.* **278**:16777.
Yamamoto *et al.* (1997) cDNA cloning, expression and chromosome mapping of the human STAT4 gene: both STAT4 and STAT1 genes are mapped to 2q32.2→q32.3. *Cytogenet. Cell Genet.* **77**:207.
Darnell *et al.* (1994) Jak-STAT pathways and transcriptional activation in response to IFNs and other extracellular signaling proteins. *Science* **264**:1415.