PRODUCT INFORMATION

STAT1β (human, recombinant)

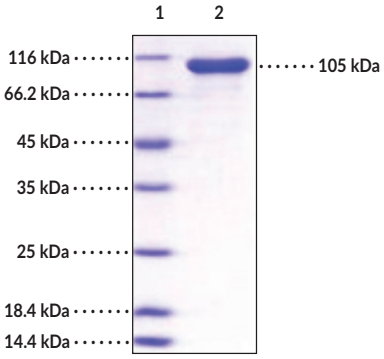
Item No. 32022

Overview and Properties

Synonyms:	Signal Transducer and Activator of Transcription-1β, STAT84, Transcription Factor ISGF-3 Component p84
Source:	Recombinant human N-terminal His- and GST-tagged STAT1β expressed in insect cells (baculovirus)
Amino Acids:	1-712 (full length)
Molecular Weight:	111 kDa
Storage:	-80°C (as supplied)
Stability:	≥1 year
Purity:	≥92% estimated by SDS-PAGE
Supplied in:	Lyophilized from sterile 20 mM Tris, pH 7.4, with 150 mM sodium chloride
Bioactivity:	See figures for details

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Image



Lane 1: MW Markers
Lane 2: STAT1β

SDS-PAGE analysis of STAT1β. This protein has a calculated molecular weight of 111 kDa. It has an apparent molecular weight of approximately 105 kDa by SDS-PAGE under reducing conditions.

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.CAYMANCHEM.COM

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Description

STAT1, also known as STAT1α, is a transcription factor and member of the STAT protein family with roles in innate and adaptive immunity.[1] It is composed of an N-terminal domain that is essential to protein-protein interactions and dimerization, a DNA binding domain that facilitates nuclear import and export, as well as DNA binding, a linker domain, tail segment, and a transactivation domain that facilitates transcription of target genes.[2] STAT1β is an isoform of STAT1 that is formed by alternative splicing and lacks the 38-amino acid transactivation domain.[3] Upon phosphorylation by JAKs, STAT1 dimerizes and is translocated to the nucleus to activate transcription of IFN-γ-inducible genes.[4] Because the C-terminal transactivation domain is required for STAT1 interaction with the transcriptional coactivator CREB-binding protein (CBP)/p300 and gene transcription, STAT1β is considered a dominant-negative regulator of STAT1 and overexpression of STAT1β inhibits IFN-γ-induced gene expression in RAW 264.7 cells. STAT1β phosphorylation is increased and IFN-γ-induced JAK1, JAK2, and STAT1 activation is decreased in RAW 264.6 cells infected with *L. major* and *L. mexicana* parasites, as well as *M. avium* bacteria.[4,5] STAT1β protein levels are reduced in patient-derived esophageal squamous cell carcinoma (ESCC) tumor samples and are positively correlated with lymph node metastasis, invasion, and shorter overall survival.[3] Cayman's STAT1β (human, recombinant) protein consists of 950 amino acids and has a calculated molecular weight of 111 kDa.

References

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2. Boisson-Dupuis, S., Kong, X.-F., Okada, S., *et al.* Inborn errors of human STAT1: Allelic heterogeneity governs the diversity of immunological and infectious phenotypes. *Curr. Opin. Immunol.* **24(4)**, 364-378 (2012).
3. Zhang, Y., Chen, Y., Yun, H., *et al.* STAT1β enhances STAT1 function by protecting STAT1α from degradation in esophageal squamous cell carcinoma. *Cell Death Dis.* **8(10)**, e3077 (2017).
4. Alvarez, G.R., Zwilling, B.S., and Lafuse, W.P. Mycobacterium avium inhibition of IFN-γ signaling in mouse macrophages: Toll-like receptor 2 stimulation increases expression of dominant-negative STAT1β by mRNA stabilization. *J. Immunol.* **171(12)**, 6766-6773 (2003).
5. Bhardwaj, N., Rosas, L.E., Lafuse, W.P., *et al. Leishmania* inhibits STAT1-mediated IFN-γ signaling in macrophages: Increased tyrosine phosphorylation of dominant negative STAT1β by *Leishmania mexicana*. *Int. J. Parasitol.* **35(1)**, 75-82 (2005).

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