

## STAT1 Protein, Human, Recombinant (His & GST)

### General Information

Synonyms:	IMD31A;IMD31B;IMD31C;STAT91;CANDF7;signal transducer and activator of transcription 1, 91kDa;ISGF-3
Protein Construction:	A DNA sequence encoding the human STAT1 isoform beta (P42224-2) (Met 1-Val 712) was fused with the N-terminal polyhistidine-tagged GST tag at the N-terminus. Predicted N terminal: Met
Species:	Human
Expression Host:	Baculovirus Insect Cells
Accession:	P42224-2
Molecular Weight:	111 kDa (predicted); 105 kDa (reducing conditions)

### QC Testing

Biological Activity:	Activity testing is in progress. It is theoretically active, but we cannot guarantee it. If you require protein activity, we recommend choosing the eukaryotic expression version first.
Purity:	> 92 % as determined by SDS-PAGE
Endotoxin:	< 1.0 EU/μg of the protein as determined by the LAL method.
Formulation:	Lyophilized from a solution filtered through a 0.22 μm filter, containing 20 mM Tris, 500 mM NaCl, pH 7.4. Typically, a mixture containing 5% to 8% trehalose, mannitol, and 0.01% Tween 80 is incorporated as a protective agent before lyophilization.

### Preparation and Storage

#### Reconstitution:

A Certificate of Analysis (CoA) containing reconstitution instructions is included with the products. Please refer to the CoA for detailed information.

#### Stability & Storage:

It is recommended to store recombinant proteins at -20°C to -80°C for future use. Lyophilized powders can be stably stored for over 12 months, while liquid products can be stored for 6-12 months at -80°C. For reconstituted protein solutions, the solution can be stored at -20°C to -80°C for at least 3 months. Please avoid multiple freeze-thaw cycles and store products in aliquots.

Actual storage temperature shall be subject to the COA.

#### Shipping:

In general, lyophilized powders are shipped with blue ice, while solutions are shipped with dry ice.

### Protein Background

STAT1 is a member of the STAT protein family. In response to cytokines and growth factors, STAT family members are phosphorylated by the receptor-associated kinases, and then form homo- or heterodimers that translocate to the cell nucleus where they act as transcription activators. STAT1 can be activated by various ligands, including

interferon-alpha, interferon-gamma, EGF, PDGF and IL6. It is a signal transducer and transcription activator that mediates cellular responses to interferons (IFNs), cytokine KITLG/SCF and other cytokines and growth factors. The phosphorylated STATs dimerize, associate with ISGF3G/IRF-9 to form a complex termed ISGF3 transcription factor, that enters the nucleus. ISGF3 binds to the IFN stimulated response element (ISRE) to activate the transcription of interferon-stimulated genes, which drive the cell in an antiviral state. In response to type II IFN (IFN-gamma), STAT1 is tyrosine- and serine-phosphorylated. It then forms a homodimer termed IFN-gamma-activated factor (GAF), migrates into the nucleus and binds to the IFN gamma activated sequence (GAS) to drive the expression of the target genes, inducing a cellular antiviral state. STAT1 becomes activated in response to KITLG/SCF and KIT signaling and may mediate cellular responses to activated FGFR1, FGFR2, FGFR3 and FGFR4. Defects in STAT1 can cause STAT1 deficiency complete and familial candidiasis type 7.

### Reference

- Shah S, et al. (2011) A novel disrupter of telomere silencing 1-like (DOT1L) interaction is required for signal transducer and activator of transcription 1 (STAT1)-activated gene expression. *J Biol Chem.* 286(48):41195-204.
- Barthson J, et al. (2011) Cytokines tumor necrosis factor- and interferon-gamma induce pancreatic beta-cell apoptosis through STAT1-mediated Bim protein activation. *J Biol Chem.* 286(45):39632-43.
- Xin Z, et al. (2011) PCBP2 enhances the antiviral activity of IFN- against HCV by stabilizing the mRNA of STAT1 and STAT2. *PLoS One.* 6(10):e25419.
- Perwitasari O, et al. (2011) Inhibitor of B kinase epsilon (IKK(epsilon)), STAT1, and IFIT2 proteins define novel innate immune effector pathway against West Nile virus infection. *J Biol Chem.* 286(52):44412-23.

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