

STAT1 protein

Catalog No :	YD0097
Reactivity :	Human
Applications :	WB;SDS-PAGE
Gene Name :	STAT1
Protein Name :	STAT1 protein
Sequence :	Amino acid: 509-735, with his-MBP tag.
Human Gene Id :	6772
Human Swiss Prot No :	P42224
Mouse Swiss Prot No :	P42225
Formulation :	Liquid in PBS
Concentration :	SDS-PAGE >90%
Storage Stability :	-20 °C/6 month, -80 °C for long storage

Background : disease:Defects in STAT1 are a cause of mendelian susceptibility to mycobacterial disease (MSMD) [MIM:209950]; also known as familial disseminated atypical mycobacterial infection. This rare condition confers predisposition to illness caused by moderately virulent mycobacterial species, such as Bacillus Calmette-Guerin (BCG) vaccine and environmental non-tuberculous mycobacteria, and by the more virulent Mycobacterium tuberculosis. Other microorganisms rarely cause severe clinical disease in individuals with susceptibility to mycobacterial infections, with the exception of Salmonella which infects less than 50% of these individuals. The pathogenic mechanism underlying MSMD is the impairment of interferon-gamma mediated immunity whose severity determines the clinical outcome. Some patients die of overwhelming mycobacterial disease with lepromatous-like lesions in early childhood, whereas others develop, later in life, disseminated but curable infections with tuberculoid granulomas. MSMD is a genetically heterogeneous disease with autosomal recessive, autosomal dominant or X-linked inheritance.,disease:Defects in STAT1 are the cause of STAT1 deficiency [MIM:600555]. Patients generally suffer from

mycobacterial or viral diseases. In the case of complete deficiency, patients can die of viral disease.,function:Signal transducer and activator of transcription that mediates signaling by interferons (IFNs). Following type I IFN (IFN-alpha and IFN-beta) binding to cell surface receptors, Jak kinases (TYK2 and JAK1) are activated, leading to tyrosine phosphorylation of STAT1 and STAT2. 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.,online information:STAT1 entry,online information:STAT1 mutation db,PTM:Phosphorylated on tyrosine and serine residues in response to IFN-alpha, IFN-gamma, PDGF and EGF. Phosphorylation on Tyr-701 (lacking in beta form) by JAK promotes dimerization and subsequent translocation to the nucleus. Phosphorylation on Ser-727 by several kinases including MAPK14, ERK1/2 and CAMKII on IFN-gamma stimulation, regulates STAT1 transcriptional activity. Phosphorylation on Ser-727 promotes sumoylation though increasing interaction with PIAS. Phosphorylation on Ser-727 by PKCdelta induces apoptosis in response to DNA-damaging agents.,PTM:Sumoylated by SUMO1, SUMO2 and SUMO3. Sumoylation is enhanced by IFN-gamma-induced phosphorylation on Ser-727, and by interaction with PIAS proteins. Enhances the transactivation activity.,similarity:Belongs to the transcription factor STAT family.,similarity:Contains 1 SH2 domain.,subcellular location:Translocated into the nucleus in response to IFN-gamma-induced tyrosine phosphorylation and dimerization.,subunit:Isoform alpha homodimerizes upon IFN-gamma induced phosphorylation. Heterodimer with STAT2 upon IFN-alpha/beta induced phosphorylation. Interacts with NMI. Interacts with Sendai virus C', C, Y1 and Y2 proteins, Nipah virus P, V and W proteins, and rabies virus phosphoprotein preventing activation of ISRE and GAS promoter (By similarity). Interacts with HCV core protein; the interaction results in STAT1 degradation. Interacts with PIAS1; the interaction requires phosphorylation on Ser-727 and inhibits STAT1 activation.,

Function :

response to reactive oxygen species, response to molecule of bacterial origin, circulatory system process,transcription, transcription, DNA-dependent, regulation of transcription, DNA-dependent, transcription from RNA polymerase II promoter, protein amino acid phosphorylation, phosphorus metabolic process, phosphate metabolic process, apoptosis, induction of apoptosis, activation of caspase activity, response to oxidative stress, cell surface receptor linked signal transduction, intracellular signaling cascade, protein kinase cascade, I-kappaB kinase/NF-kappaB cascade, JAK-STAT cascade, tyrosine phosphorylation of STAT protein, response to nutrient, blood circulation,cell death, positive regulation of cell proliferation, response to mechanical stimulus, response to virus, response to bacterium, response to abiotic stimulus, response to endogenous stimulus, response to hormone stimulus, r

Subcellular

Cytoplasm . Nucleus . Translocated into the nucleus upon tyrosine

Location : phosphorylation and dimerization, in response to IFN-gamma and signaling by activated FGFR1, FGFR2, FGFR3 or FGFR4 (PubMed:15322115). Monomethylation at Lys-525 is required for phosphorylation at Tyr-701 and translocation into the nucleus (PubMed:28753426). Translocates into the nucleus in response to interferon-beta stimulation (PubMed:26479788). .

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