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ProductInformation

Anti-phospho-STAT 1 (pTyr^{701})
Developed in Rabbit, Affinity Purified Antibody

Product Number **S 2315**

Product Description

Anti-phospho-STAT 1 (pTyr^{701}) was produced in rabbit using a synthetic phosphopeptide derived from the region of human STAT 1 that contains tyrosine 701 as immunogen. The antibody is purified by epitope-specific affinity chromatography and preadsorbed to remove any reactivity towards the non-phosphorylated STAT 1 protein. Anti-phospho-STAT 1 (pTyr^{701}) specifically recognizes 88-92 kDa STAT 1 phosphorylated on tyrosine 701.

The antibody detects human, mouse, rat and chicken STAT 1 (pTyr^{701}). It has been used in immunoblotting applications.

STAT proteins (Signal Transduction and Activators of Transcription) are latent cytoplasmic transcription factors that have the dual function of signal transduction and activation of transcription. STATs are activated by tyrosine phosphorylation in response to different ligands, after which they translocate to the cell nucleus. The N-terminal region is highly homologous among the STAT proteins and surrounds a completely conserved arginine residue. STATs are a part of the JAK-STAT signaling pathway – a major pathway of the immune system. All cytokines transduce critical signals through this pathway.[1,2,3]

STAT 1, is activated by a number of different ligands, including IFNα, IFNγ, EGF, PDGF and IL6. STAT 1 homodimer binds to a site termed GAS, first defined as required for IFN-γ induction. Variations on this site are also used in response to IL6, PDGF, and other ligands. Phosphorylation of tyrosine 701 is required for STAT 1 dissociation from IFNGR1, homodimerization, and nuclear translocation. Tyrosine 701 phosphorylation impairment results in loss of STAT 1 functions.[4,5]

STAT 2, in contrast, is activated by IFN-α but not by IFN-γ or any of the other ligands mentioned above. STAT 3 is known to be activated by IGF, IL6, LIF, and perhaps other ligands but is not activated by IFN-γ. STAT 4 is present in high concentration in the testis but has not been found in a phosphorylated form in cells.

Binding of interleukin-5 to its specific receptor activates JAK2, which leads to the tyrosine phosphorylation of STAT 3 proteins. Like STAT 3, STAT 3-β is phosphorylated on tyrosine 705 and binds to the pIRE from the ICAM1 promoter after IL-5 stimulation. Co-expression of STAT 3-β inhibits the transactivation potential of STAT 3. These results suggest that STAT 3-β functions as a negative regulator of transcription. In many human cancers and transformed cell lines, STAT 3 is persistently activated, and in cell culture, active STAT 3 is either required for transformation, enhances transformation, or blocks apoptosis.[6,7,8]

Reagents

Anti-phospho-STAT 1 (pTyr^{701}) is supplied as a solution in TRIS buffered saline, pH 7.4, containing 50% glycerol, 1.0 mg/mL BSA (IgG, protease free) and 0.01% sodium azide.

Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazards and safe handling practices.

Storage/Stability

Store at –20 °C. Due to the presence of 50% glycerol the antibody will remain in solution. For extended storage, centrifuge the vial briefly before opening and prepare working aliquots. To ensure accurate dilutions mix gently, remove excess solution from pipette tip with clean absorbent paper, pipette slowly. The antibody is stable for at least six months when stored appropriately. Working dilutions should be discarded if not used within 12 hours.

Product Profile

The amount of antibody is sufficient for 10 immunoblots.

The recommended working dilution of 1:500 is determined by immunoblotting using human mouse 3T3-L1 adipocytes stimulated with leukemia inhibitory factor (LIF). Data demonstrates that only peptide corresponding to the STAT1 ($pTyr^{701}$) blocks the antibody signal, which confirms the specificity of Anti-STAT 1 ($pTyr^{701}$) for 88-92 kDa protein.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working concentration by titration test.

References

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