SANTA CRUZ BIOTECHNOLOGY, INC.

JAK1 (m): 293T Lysate: sc-125503

BACKGROUND

JAK1 (Janus kinase 1) belongs to the family of non-receptor Janus tyrosine kinases, which regulate a spectrum of cellular functions downstream of activated cytokine receptors in the lymphohematopoietic system. Immunological stimuli, such as interferons and cytokines, induce recruitment of Stat transcription factors to cytokine receptor-associated JAK1. JAK1 then phosphorylates proximal Stat factors, which subsequently dimerize, translocate to the nucleus and bind to *cis* elements upstream of target gene promoters to regulate transcription. Upon ligand binding, JAK1 undergoes tyrosine phosphorylation and catalytic activation in an interdependent manner. Phosphorylation of tyrosine residues at position 1022 and 1023 is believed to function in the activation of catalytic events. The canonical JAK/Stat pathway is integral to maintaining a normal immune system by stimulating proliferation, differentiation, survival and host resistance to pathogens. Altering JAK/Stat signaling to reduce cytokine induced pro-inflammatory responses represents an attractive target for anti-inflammatory therapies.

REFERENCES

1. Gauzzi, M.C., et al. 1996. Interferon-α-dependent activation of Tyk2 requires phosphorylation of positive regulatory tyrosines by another kinase. J. Biol. Chem. 271: 20494-20500.
2. Heim, M.H. 1996. The JAK/Stat pathway: specific signal transduction from the cell membrane to the nucleus. Eur. J. Clin. Invest. 26: 1-12.
3. Decker, T., et al. 1997. JAKs, Stats and the immune system. Immunobiology 198: 99-111.
4. Liu, K.D., et al. 1997. Janus kinases in interleukin-2-mediated signaling: JAK1 and JAK3 are differentially regulated by tyrosine phosphorylation. Curr. Biol. 7: 817-826.
5. Leonard, W.J., et al. 1998. JAKs and Stats: biological implications. Annu. Rev. Immunol. 16: 293-322.
6. Kotenko, S.V., et al. 2000. JAK/Stat signal transduction pathway through the eyes of cytokine class II receptor complexes. Oncogene 19: 2557-2565.
7. Delgado, M., et al. 2000. Inhibition of IFN-γ-induced Janus kinase-1-Stat1 activation in macrophages by vasoactive intestinal peptide and pituitary adenylate cyclase-activating polypeptide. J. Immunol. 165: 3051-3057.

CHROMOSOMAL LOCATION

Genetic locus: Jak1 (mouse) mapping to 4 C6.

PRODUCT

JAK1 (m): 293T Lysate represents a lysate of mouse JAK1 transfected 293T cells and is provided as 100 µg protein in 200 µl SDS-PAGE buffer.

STORAGE

Store at -20° C. Repeated freezing and thawing should be minimized. Sample vial should be boiled once prior to use. Non-hazardous. No MSDS required.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

APPLICATIONS

JAK1 (m): 293T Lysate is suitable as a Western Blotting positive control for mouse reactive JAK1 antibodies. Recommended use: 10-20 µl per lane.

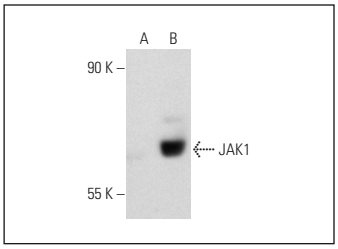
Control 293T Lysate: sc-117752 is available as a Western Blotting negative control lysate derived from non-transfected 293T cells.

JAK1 (A-9): sc-1677 is recommended as a positive control antibody for Western Blot analysis of enhanced mouse JAK1 expression in JAK1 transfected 293T cells (starting dilution 1:100, dilution range 1:100-1:1,000).

RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048.

DATA



JAK1 (A-9): sc-1677. Western blot analysis of JAK1 expression in non-transfected: sc-117752 (**A**) and truncated mouse JAK1 transfected: sc-125503 (**B**) 293T whole cell lysates.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.