SANTA CRUZ BIOTECHNOLOGY, INC.

JAK3 siRNA (m): sc-35721

BACKGROUND

JAK3 (Janus kinase 3) belongs to the family of non-receptor Janus tyrosine kinases, which regulate a spectrum of cellular functions downstream of activated cytokine receptors in the lympho-hematopoietic system. Immunological stimuli, such as interferons and cytokines, induce recruitment of Stat transcription factors to cytokine receptor-associated JAK3. JAK3 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. The canonical JAK/Stat pathway is integral to maintaining a normal immune system, 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. 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.
2. Decker, T. and Meinke, A. 1997. JAKs, Stats and the immune system. Immunobiology 198: 99-111.
3. Leonard, W.J. and O'Shea, J.J. 1998. JAKs and Stats: biological implications. Annu. Rev. Immunol. 16: 293-322.
4. Kirken, R.A., et al. 2000. Functional uncoupling of the Janus kinase 3-Stat5 pathway in malignant growth of human T cell leukemia virus type 1-transformed human T cells. J. Immunol. 165: 5097-5104.
5. Bianchi, M., et al. 2000. Inhibition of IL-2-induced JAK-Stat signaling by glucocorticoids. Proc. Natl. Acad. Sci. USA 97: 9573-9578.
6. Negoro, S., et al. 2000. Activation of JAK/Stat pathway transduces cytoprotective signal in rat acute myocardial infarction. Cardiovasc. Res. 47: 797-805.
7. Brown, G.R., et al. 2000. Naphthyl ketones: a new class of Janus kinase 3 inhibitors. Bioorg. Med. Chem. Lett. 10: 575-579.

CHROMOSOMAL LOCATION

Genetic locus: Jak3 (mouse) mapping to 8 B3.3.

PRODUCT

JAK3 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see JAK3 shRNA Plasmid (m): sc-35721-SH and JAK3 shRNA (m) Lentiviral Particles: sc-35721-V as alternate gene silencing products.

For independent verification of JAK3 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-35721A, sc-35721B and sc-35721C.

PROTOCOLS

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

STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

JAK3 siRNA (m) is recommended for the inhibition of JAK3 expression in mouse cells.

SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

GENE EXPRESSION MONITORING

JAK3 (B-12): sc-6932 is recommended as a control antibody for monitoring of JAK3 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

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. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor JAK3 gene expression knockdown using RT-PCR Primer: JAK3 (m)-PR: sc-35721-PR (20 µl, 435 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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