SANTA CRUZ BIOTECHNOLOGY, INC.

JAK2 siRNA (h): sc-39099

BACKGROUND

JAK2 (Janus kinase 2) belongs to the emerging 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 JAK2. JAK2 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 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.

CHROMOSOMAL LOCATION

Genetic locus: JAK2 (human) mapping to 9p24.1.

PRODUCT

JAK2 siRNA (h) 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 JAK2 shRNA Plasmid (h): sc-39099-SH and JAK2 shRNA (h) Lentiviral Particles: sc-39099-V as alternate gene silencing products.

For independent verification of JAK2 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-39099A, sc-39099B and sc-39099C.

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

JAK2 siRNA (h) is recommended for the inhibition of JAK2 expression in human 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

JAK2 (C-10): sc-390539 is recommended as a control antibody for monitoring of JAK2 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor JAK2 gene expression knockdown using RT-PCR Primer: JAK2 (h)-PR: sc-39099-PR (20 µl, 546 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

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3. Staršíchová, A., et al. 2010. TGF-β1 suppresses IL-6-induced Stat3 activation through regulation of JAK2 expression in prostate epithelial cells. Cell. Signal. 22: 1734-1744.
4. Zhang, L.L., et al. 2013. Overexpression of AKT decreases the chemosensitivity of gastric cancer cells to cisplatin *in vitro* and *in vivo*. Mol. Med. Rep. 7: 1387-1390.
5. Zhang, J., et al. 2013. Regulation of AKT gene expression by cisplatin. Oncol. Lett. 5: 756-760.
6. Okabe, S., et al. 2014. Combination of the Abl kinase inhibitor imatinib with the Janus kinase 2 inhibitor TG101348 for targeting residual Bcr-Abl-positive cells. J. Hematol. Oncol. 7: 37.
7. Zhao, H., et al. 2015. A novel anti-cancer agent Icaritin suppresses hepatocellular carcinoma initiation and malignant growth through the IL-6/Jak2/Stat3 pathway. Oncotarget 6: 31927-31943.
8. Li, X.G., et al. 2019. Tau accumulation triggers Stat1-dependent memory deficits by suppressing NMDA receptor expression. EMBO Rep. 20: e47202.
9. Kang, M.A., et al. 2019. Interleukin4Rα (IL4Rα) and IL13Rα1 are associated with the progress of renal cell carcinoma through Janus kinase 2 (JAK2)/forkhead box O3 (FOXO3) pathways. Cancers 11: 1394.
10. Wang, H.Q., et al. 2019. Increased autocrine interleukin-6 production is significantly associated with worse clinical outcome in patients with chronic lymphocytic leukemia. J. Cell. Physiol. 234: 13994-14006.
11. Hong, X.Y., et al. 2020. Stat3 ameliorates cognitive deficits by positively regulating the expression of NMDARs in a mouse model of FTDP-17. Signal Transduct. Target. Ther. 5: 295.

RESEARCH USE

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