SANTA CRUZ BIOTECHNOLOGY, INC.

Stat5 siRNA (h): sc-29495

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Signal transducer and activator of transcription 5a (Stat5a) and Stat5b, which share 96% homology, undergo receptor tyrosine kinase or G protein-coupled receptor-dependent phosphorylation in response to cytokines or growth factors, and then form homo- or heterodimers that translocate to the nucleus, where they initiate transcription. Activation of Stat5a via IL-2, IL-3, IL-7 GM-CSF, erythropoietin, thrombopoietin and growth hormones influences proliferation, differentiation and apoptosis in lymphohematopoietic cells. Phosphorylation of Stat5a at Ser 127/Ser 128 and Ser 779 are contigent on ErbB4-mediated activation of Stat5a. Activation of Stat5b via IL-2, IL-4, CSF1 and growth hormones influences TCR signaling, apoptosis, adult mammary gland development and sexual dimorphism of liver gene expression. Stat5b is the major liver-expressed Stat5 form that has been shown to fuse with the retinoic acid receptor α gene in acute promyelocytic leukemias (APLL). Stat5a/B null mice have severely impaired lymphoid development and differentiation.

REFERENCES

1. Lin, J.X. and Leonard, W.J. 2000. The role of Stat5a and Stat5b in signaling by IL-2 family cytokines. Oncogene 19: 2566-2576.
2. Sexl, V., et al. 2000. Stat5a/b contribute to interleukin 7-induced B-cell precursor expansion, but Abl- and Bcr/Abl-induced transformation are independent of Stat5. Blood 96: 2277-2283.

CHROMOSOMAL LOCATION

Genetic locus: STAT5A (human) mapping to 17q21.2.

PRODUCT

Stat5 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 Stat5 shRNA Plasmid (h): sc-29495-SH and Stat5 shRNA (h) Lentiviral Particles: sc-29495-V as alternate gene silencing products.

For independent verification of Stat5 (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-29495A, sc-29495B and sc-29495C.

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

Stat5 siRNA (h) is recommended for the inhibition of Stat5 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

Stat5a (C-6): sc-271542 is recommended as a control antibody for monitoring of Stat5 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).

SELECT PRODUCT CITATIONS

1. Koon, H.W., et al. 2006. Substance P stimulates cyclooxygenase-2 and prostaglandin E2 expression through JAK-Stat activation in human colonic epithelial cells. J. Immunol. 176: 5050-5059.
2. Yamaza, T., et al. 2009. Mesenchymal stem cell-mediated ectopic hematopoiesis alleviates aging-related phenotype in immunocompromised mice. Blood 113: 2595-2604.
3. Yoo, J., et al. 2012. Opposing regulation of PROX1 by interleukin-3 receptor and NOTCH directs differential host cell fate reprogramming by Kaposi sarcoma herpes virus. PLoS Pathog. 8: e1002770.
4. Waight, J.D., et al. 2014. Regulation of the interferon regulatory factor-8 (IRF-8) tumor suppressor gene by the signal transducer and activator of transcription 5 (Stat5) transcription factor in chronic myeloid leukemia. J. Biol. Chem. 289: 15642-15652.
5. Xu, X., et al. 2016. BM microenvironmental protection of CML cells from imatinib through Stat5/NFκB signaling and reversal by Wogonin. Oncotarget 7: 24436-24454.
6. Zhao, C., et al. 2017. IGF-1 induces the epithelial-mesenchymal transition via Stat5 in hepatocellular carcinoma. Oncotarget 8: 111922-111930.
7. Heo, J., et al. 2018. Stat5 phosphorylation is responsible for the excessive potency of HB-EGF. J. Cell. Biochem. 119: 5297-5307.
8. Navarra, G., et al. 2019. N^6-isopentenyladenosine enhances the radiosensitivity of glioblastoma cells by inhibiting the homologous recombination repair protein Rad51 expression. Front. Oncol. 9: 1498.
9. Wang, S., et al. 2022. Anti-growth, anti-angiogenic, and pro-apoptotic effects by CX-4945, an inhibitor of casein kinase 2, on HuCCT-1 human cholangiocarcinoma cells via control of caspase-9/3, DR-4, STAT-3/STAT-5, Mcl-1, eIF-2α, and HIF-1α. Int. J. Mol. Sci. 23: 6353.

RESEARCH USE

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