SANTA CRUZ BIOTECHNOLOGY, INC.

Stat3 siRNA (m): sc-29494

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Membrane receptor signaling by various ligands, including interferons and growth hormones such as EGF, induces activation of JAK kinases, which then leads to tyrosine phosphorylation of the various Stat transcription factors. Stat1 and Stat2 are induced by IFN-α and form a heterodimer, which is part of the ISGF-3 transcription factor complex. Although early reports indicate Stat3 activation by EGF and IL-6, it has been shown that Stat3β appears to be activated by both while Stat3α is activated by EGF, but not by IL-6. Highest expresion of Stat4 is seen in testis and myeloid cells. IL-12 has been identified as an activator of Stat4. Stat5 has been shown to be activated by prolactin and by IL-3. Stat6 is involved in IL-4 activated signaling pathways.

CHROMOSOMAL LOCATION

Genetic locus: Stat3 (mouse) mapping to 11 D.

PRODUCT

Stat3 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 Stat3 shRNA Plasmid (m): sc-29494-SH and Stat3 shRNA (m) Lentiviral Particles: sc-29494-V as alternate gene silencing products.

For independent verification of Stat3 (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-29494A, sc-29494B and sc-29494C.

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

Stat3 siRNA (m) is recommended for the inhibition of Stat3 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

Stat3 (F-2): sc-8019 is recommended as a control antibody for monitoring of Stat3 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 Stat3 gene expression knockdown using RT-PCR Primer: Stat3 (m)-PR: sc-29494-PR (20 µl, 455 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Christophi, G.P., et al. 2008. Promoter-specific induction of the phosphatase SHP-1 by viral infection and cytokines in CNS glia. J. Neurochem. 105: 2511-2523.
2. Breitenbuecher, F., et al. 2009. A novel molecular mechanism of primary resistance to FLT3-kinase inhibitors in AML. Blood 113: 4063-4073.
3. Choi, J.K., et al. 2011. Granulocyte macrophage-colony stimulating factor shows anti-apoptotic activity in neural progenitor cells via JAK/Stat5-Bcl-2 pathway. Apoptosis 16: 127-134.
4. Lu, D.Y., et al. 2013. Interferon-α induces nitric oxide synthase expression and haem oxygenase-1 down-regulation in microglia: implications of cellular mechanism of IFN-α-induced depression. Int. J. Neuropsychopharmacol. 16: 433-444.
5. Yin, S., et al. 2014. SHP-1 arrests mouse early embryo development through downregulation of Nanog by dephosphorylation of Stat3. PLoS ONE 9: e86330.
6. Han, X., et al. 2015. 14-3-3ζ regulates immune response through Stat3 signaling in oral squamous cell carcinoma. Mol. Cells 38: 112-121.
8. Huang, Q., et al. 2016. IL-17 induces EMT via Stat3 in lung adenocarcinoma. Am. J. Cancer Res. 6: 440-451.
9. Zhou, Y.L., et al. 2018. Antibody modified nanoparticle-mediated delivery of miR-124 regulates apoptosis via repression the Stat3 signal in mycobacterial-infected microglia. J. Biomed. Nanotechnol. 14: 2185-2197.
10. Li, Y.L., et al. 2019. Metformin alleviates inflammatory response in non-alcoholic steatohepatitis by restraining signal transducer and activator of transcription 3-mediated autophagy inhibition *in vitro* and *in vivo*. Biochem. Biophys. Res. Commun. 513: 64-72.
11. Radigan, K.A., et al. 2019. Influenza A virus infection induces muscle wasting via IL-6 regulation of the E3 ubiquitin ligase atrogin-1. J. Immunol. 202: 484-493.

RESEARCH USE

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