

# Stat5b siRNA (bovine): sc-270153

## 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 contiguous on ErbB-4-mediated activation of Stat5a. Activation of Stat5b via IL-2, IL-4, CSF-1 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 a gene in acute promyelocytic leukemias (APLL). Stat5a/b null mice have severely impaired lymphoid development and differentiation.

## REFERENCES

- Lin, J.X., et al. 2000. The role of Stat5a and Stat5b in signaling by IL-2 family cytokines. *Oncogene* 19: 2566-2576.
- 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.
- Mahajan, S., et al. 2001. Transcription factor Stat5a is a substrate of Bruton's tyrosine kinase in B cells. *J. Biol. Chem.* 276: 31216-31228.
- Park, S.H., et al. 2001. Serine phosphorylation of GH-activated signal transducer and activator of transcription 5a (Stat5a) and Stat5b: impact on Stat5 transcriptional activity. *Mol. Endocrinol.* 15: 2157-2171.
- Benitah, S.A., et al. 2003. Stat5a activation mediates the epithelial to mesenchymal transition induced by oncogenic Rho A. *Mol. Biol. Cell* 14: 40-53.
- Behbod, F., et al. 2003. Specific inhibition of Stat5a/b promotes apoptosis of IL-2-responsive primary and tumor-derived lymphoid cells. *J. Immunol.* 171: 3919-3927.
- Snow, J.W., et al. 2003. Loss of tolerance and autoimmunity affecting multiple organs in Stat5a/5b-deficient mice. *J. Immunol.* 171: 5042-5050.

## CHROMOSOMAL LOCATION

Genetic locus: STAT5B (bovine) mapping to 19.

## PRODUCT

Stat5b siRNA (bovine) is a pool of 2 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see Stat5b shRNA Plasmid (bovine): sc-270153-SH and Stat5b shRNA (bovine) Lentiviral Particles: sc-270153-V as alternate gene silencing products.

For independent verification of Stat5b (bovine) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-270153A and sc-270153B.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

Stat5b siRNA (bovine) is recommended for the inhibition of Stat5b expression in bovine 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  $\mu$ M in 66  $\mu$ l. 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

Stat5b (G-2): sc-1656 is recommended as a control antibody for monitoring of Stat5b 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-IgG $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Stat5b gene expression knockdown using RT-PCR Primer: Stat5b (bovine)-PR: sc-270153-PR (20  $\mu$ l). 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.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.