SANTA CRUZ BIOTECHNOLOGY, INC.

Sp3 siRNA (h): sc-29490

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The Power to Question

BACKGROUND

The Sp transcription factor family includes Sp1, Sp2, Sp3 (SPR-2) and Sp4 (SPR-1). Sp transcription factors share similar structures but do not share similar functions. All four proteins contain a highly conserved DNA-binding domain composed of three zinc fingers at the C-terminus. Sp family members bind the consensus sequence GGGGCGGGGC and other closely related sequences which are known as GC boxes. Sp1, Sp3 and Sp4 share a high affinity for GC boxes while Sp2 does not. Sp2 only weakly binds to GT boxes. Sp1, Sp2 and Sp3 are ubiquitously expressed, while Sp4 is abundantly expressed in brain with limited expression in other tissues. Sp1 and Sp3, but not Sp2 or Sp4, interact with E2, a regulatory element for the β4 subunit of neuronal nicotinic acetylcholine receptors. Sp3 is the only Sp member to inhibit Sp1 and Sp4 mediated transcription. Multiple isoforms of Sp3 exist due to alternative splicing events.

CHROMOSOMAL LOCATION

Genetic locus: SP3 (human) mapping to 2q31.1.

PRODUCT

Sp3 siRNA (h) is a target-specific 19-25 nt siRNA 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 Sp3 shRNA Plasmid (h): sc-29490-SH and Sp3 shRNA (h) Lentiviral Particles: sc-29490-V as alternate gene silencing 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

Sp3 siRNA (h) is recommended for the inhibition of Sp3 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.

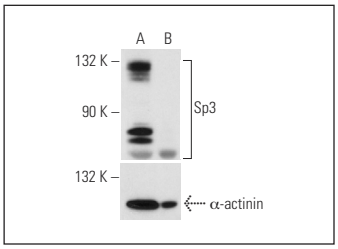
GENE EXPRESSION MONITORING

Sp3 (G-7): sc-365220 is recommended as a control antibody for monitoring of Sp3 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 Sp3 gene expression knockdown using RT-PCR Primer: Sp3 (h)-PR: sc-29490-PR (20 µl, 464 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

DATA



Sp3 siRNA (h): sc-29490. Western blot analysis of Sp3 expression in non-transfected control (**A**) and Sp3 siRNA transfected (**B**) HeLa cells. Blot probed with Sp3 (D-20): sc-644. α-actinin (H-2): sc-17829 used as specificity and loading control.

SELECT PRODUCT CITATIONS

1. Wooten, L.G., et al. 2005. Sp1/Sp3-dependent regulation of human telomerase reverse transcriptase promoter activity by the bioactive sphingolipid ceramide. J. Biol. Chem. 280: 28867-28876.
2. Zou, X., et al. 2011. Human glycolipid transfer protein gene (GLTP) expression is regulated by Sp1 and Sp3. J. Biol. Chem. 286: 1301-1311.
3. Beauchef, G., et al. 2012. The p65 subunit of NFκB inhibits COL1A1 gene transcription in human dermal and scleroderma fibroblasts through its recruitment on promoter by protein interaction with transcriptional activators (c-Krox, Sp1, and Sp3). J. Biol. Chem. 287: 3462-3478.
4. Peplowski, M.A., et al. 2017. Tumor necrosis factor α decreases aquaporin 3 expression in intestinal epithelial cells through inhibition of constitutive transcription. Physiol. Rep. 5: e13451.
5. Peplowski, M.A., et al. 2018. Interferon γ decreases intestinal epithelial aquaporin 3 expression through downregulation of constitutive transcription. J. Mol. Med. 96: 1081-1093.
6. Ruan, G., et al. 2022. *Roseburia intestinalis* and its metabolite butyrate inhibit colitis and upregulate TLR5 through the Sp3 signaling pathway. Nutrients 14: 3041.

RESEARCH USE

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