SANTA CRUZ BIOTECHNOLOGY, INC.

Sp1 siRNA (r): sc-61895

The Power to Question

BACKGROUND

Sp1 is a sequence-specific transcription factor that recognizes GGGGCGGGGC and closely related sequences, which are often referred to as GC boxes. Sp1 was initially identified as a HeLa cell-derived factor that selectively activates *in vitro* transcription from the SV40 promoter and binds to the multiple GC boxes in the 21-bp repeated elements in SV40. The sequence specificity of DNA binding is conferred by Zn (II) fingers, whereas a different region of Sp1 appears to regulate the affinity of DNA binding. Sp1 belongs to a subgroup of transcription factors that are phosphorylated upon binding to promoter sequences. Evidence suggests that the early growth response gene, Erg-1 (also known as Zif268 or NGF1-A), may downregulate certain mammalian gene promoters by competing with Sp1 for binding to an overlapping binding motif. The gene encoding human Sp1 maps to chromosome 12q13.13.

CHROMOSOMAL LOCATION

Genetic locus: Sp1 (rat) mapping to 7q36.

PRODUCT

Sp1 siRNA (r) 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 Sp1 shRNA Plasmid (r): sc-61895-SH and Sp1 shRNA (r) Lentiviral Particles: sc-61895-V as alternate gene silencing products.

For independent verification of Sp1 (r) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-61895A, sc-61895B and sc-61895C.

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

Sp1 siRNA (r) is recommended for the inhibition of Sp1 expression in rat 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

Sp1 (1C6): sc-420 is recommended as a control antibody for monitoring of Sp1 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-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Sp1 gene expression knockdown using RT-PCR Primer: Sp1 (r)-PR: sc-61895-PR (20 µl, 593 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Zhang, L., et al. 2011. Rat pancreatic level of cystathionine γ-lyase is regulated by glucose level via specificity protein 1 (Sp1) phosphorylation. Diabetologia 54: 2615-2625.
2. Cailotto, F., et al. 2011. Calcium input potentiates the transforming growth factor (TGF)-β1-dependent signaling to promote the export of inorganic pyrophosphate by articular chondrocyte. J. Biol. Chem. 286: 19215-19228.
3. Shi, J.H., et al. 2012. Retinoic acid receptor α mediates all-*trans*-retinoic acid-induced Klf4 gene expression by regulating Klf4 promoter activity in vascular smooth muscle cells. J. Biol. Chem. 287: 10799-10811.
4. Mehmood, T., et al. 2013. Rsk2 knockdown in PC12 cells results in Sp1 dependent increased expression of the Gria2 gene, encoding the AMPA receptor subunit GluR2. Int. J. Mol. Sci. 14: 3358-3375.
5. Nakayama, T., et al. 2016. The cell- and tissue-specific transcription mechanism of the TATA-less syntaxin 1A gene. FASEB J. 30: 525-543.
6. Zhao, G., et al. 2019. Transcriptional suppression of CPI-17 gene expression in vascular smooth muscle cells by tumor necrosis factor, krüppel-like factor 4, and Sp1 is associated with lipopolysaccharide-induced vascular hypocontractility, hypotension, and mortality. Mol. Cell. Biol. 39: e00070-19.
7. Duan, P., et al. 2020. MiR-142-5p/DAX1-dependent regulation of P450c17 contributes to triclosan-mediated testosterone suppression. Sci. Total Environ. 717: 137280.
8. Meinung, C.P., et al. 2024. OXTR-mediated signaling in astrocytes contributes to anxiolysis. Mol. Psychiatry. E-published.

RESEARCH USE

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