

ATF-3 siRNA (h): sc-29757

BACKGROUND

Eukaryotic gene transcription is regulated by sequence-specific transcription factors which bind modular *cis* acting promoter and enhancer elements. The cAMP response element (CRE), one of the best studied of such elements, consists of the palindromic octanucleotide TGACGTCA. Several CRE binding proteins have been identified within the ATF/CREB family, the best characterized of which include CREB-1, CREB-2 (also designated ATF-4), ATF-1, ATF-2 and ATF-3. These proteins share highly related COOH-terminal leucine zipper dimerization and basic DNA binding domains but are highly divergent in their amino terminal domains. Although each of the ATF/CREB proteins appear capable of binding CRE in its homodimeric form, certain of these also bind as heterodimers, both within the ATF/CREB family and even with members of the AP-1 transcription factor family.

CHROMOSOMAL LOCATION

Genetic locus: ATF3 (human) mapping to 1q32.3.

PRODUCT

ATF-3 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see ATF-3 shRNA Plasmid (h): sc-29757-SH and ATF-3 shRNA (h) Lentiviral Particles: sc-29757-V as alternate gene silencing products.

For independent verification of ATF-3 (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-29757A, sc-29757B and sc-29757C.

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

APPLICATIONS

ATF-3 siRNA (h) is recommended for the inhibition of ATF-3 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 μ M in 66 μ 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

ATF-3 (44C3a): sc-81189 is recommended as a control antibody for monitoring of ATF-3 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 ATF-3 gene expression knockdown using RT-PCR Primer: ATF-3 (h)-PR: sc-29757-PR (20 μ l, 539 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Yamaguchi, K., et al. 2006. Activating transcription factor 3 and early growth response 1 are the novel targets of LY294002 in a phosphatidylinositol 3-kinase-independent pathway. *Cancer Res.* 66: 2376-2384.
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4. Kwon, O., et al. 2012. Patulin induces colorectal cancer cells apoptosis through EGR-1 dependent ATF-3 up-regulation. *Cell. Signal.* 24: 943-950.
5. Lin, L., et al. 2014. Transcriptional regulation of Stat3 by SPTBN1 and Smad3 in HCC through cAMP-response element-binding proteins ATF-3 and CREB2. *Carcinogenesis* 35: 2393-2403.
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7. Wu, Y.P., et al. 2017. Activating transcription factor 3 represses cigarette smoke-induced IL6 and IL8 expression via suppressing NF κ B activation. *Toxicol. Lett.* 270: 17-24.
8. Yan, F., et al. 2018. ATF-3 is positively involved in particulate matter-induced airway inflammation *in vitro* and *in vivo*. *Toxicol. Lett.* 287: 113-121.
9. Cheng, C.T., et al. 2018. Arginine starvation kills tumor cells through aspartate exhaustion and mitochondrial dysfunction. *Commun. Biol.* 1: 178.
10. Bueno, M., et al. 2018. ATF3 represses PINK1 gene transcription in lung epithelial cells to control mitochondrial homeostasis. *Aging Cell.* E-published.
11. Chen, J., et al. 2020. Xiao-Ai-Ping injection enhances effect of paclitaxel to suppress breast cancer proliferation and metastasis via activating transcription factor 3. *Integr. Cancer Ther.* 19: 1534735420906463.

RESEARCH USE

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