SANTA CRUZ BIOTECHNOLOGY, INC.

ATF-7 siRNA (h): sc-29759

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) consists of the palindromic octanucleotide TGACGTCA. There are several CRE binding proteins within the ATF/CREB family, including CREB-1, CREB-2 (also designated ATF-4), ATF-1, ATF-2 and ATF-3. A novel basic leucine zipper (bZIP) protein, designated ATF-7, is closely related to members of the ATF/CREB family of bZIP proteins, with highest homology to ATF-4. ATF-7 physically interacts with the PRL-1 protein-tyrosine phosphatase (PTPase), which is a predominately nuclear, farnesylated PTPase. ATF-7 homodimers bind specifically to CRE elements. ATF-7 is expressed in a number of different tissues and is expressed in association with differentiation. ATF-7 and PRL-1 interact with each other through the bZIP region of ATF-7 and the phosphatase domain of PRL-1. In addition, PRL-1 is able to dephosphorylate ATF-7 *in vitro*.

REFERENCES

1. Montminy, M.R., et al. 1986. Identification of a cyclic-AMP-response element within the rat somatostatin gene. Proc. Natl. Acad. Sci. USA 83: 6682-6686.
2. Lin, Y.S. and Green, M.R. 1988. Interaction of a common cellular transcription factor, ATF, with regulatory elements in both E1a-inducible and cyclic AMP-inducible promoters. Proc. Natl. Acad. Sci. USA 85: 3396-3400.
3. Hoeffler, J.P., et al. 1988. Cyclic AMP-responsive DNA-binding protein: structure based on a cloned placental cDNA. Science 242: 1430-1433.
4. Hai, T., et al. 1989. Transcription factor ATF cDNA clones: an extensive family of leucine zipper proteins able to selectively form DNA-binding heterodimers. Genes Dev. 8: 2083-2090.
5. Maekawa, T., et al. 1989. Leucine zipper structure of the protein CRE-BPI binding to the cyclic AMP response element in brain. EMBO J. 8: 2023-2028.
6. Kara, C.J., et al. 1990. A cDNA for a human cyclin AMP response element-binding protein which is distinct from CREB and expressed preferentially in brain. Mol. Cell. Biol. 10: 1347-1357.

CHROMOSOMAL LOCATION

Genetic locus: AATF7 (human) mapping to 12q13.13.

PRODUCT

ATF-7 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see ATF-7 shRNA Plasmid (h): sc-29759-SH and ATF-7 shRNA (h) Lentiviral Particles: sc-29759-V as alternate gene silencing products.

For independent verification of ATF-7 (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-29759A, sc-29759B and sc-29759C.

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

ATF-7 siRNA (h) is recommended for the inhibition of ATF-7 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ATF-7 gene expression knockdown using RT-PCR Primer: ATF-7 (h)-PR: sc-29759-PR (20 µl, 483 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Chuang, H.C., et al. 2008. Up-regulation of activating transcription factor-5 suppresses SAP expression to activate T cells in hemophagocytic syndrome associated with Epstein-Barr virus infection and immune disorders. Am. J. Pathol. 173: 1397-405.
2. Lee, J.R., et al. 2014. The contribution of activating transcription factor 3 to apoptosis of human colorectal cancer cells by protocatechualdehyde, a naturally occurring phenolic compound. Arch. Biochem. Biophys. 564: 203-210.

RESEARCH USE

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

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.