SANTA CRUZ BIOTECHNOLOGY, INC.

CREB-1 siRNA (h): sc-29281

BACKGROUND

Eukaryotic gene transcription is regulated by sequence-specific transcription factors that bind modular *cis*-acting promoter and enhancer elements. The ATF/CREB transcription factor family binds the palindromic cAMP response element (CRE) octanucleotide TGACGTCA. The ATF/CREB family includes CREB-1, CREB-2 (also designated ATF-4), ATF-1, ATF-2 and ATF-3. This family of proteins contains highly divergent N-terminal domains, but shares a C-terminal leucine zipper for dimerization and DNA binding. Although CREB can bind to DNA in an unphosphorylated state, it cannot activate transcription. Phosphorylation of CREB on Ser 133 by protein kinase A facilitates its interaction with the CREB-binding protein (CBP) and activates the basal transcription complex. CREB functions in neoglucogenesis through interactions with the nuclear co-activator PGC-1. CREB may play a role in the pathogenesis of type II diabetes and dilated cardiomyopathy.

REFERENCES

1. Montminy, M.R., et al. 1986. Identification of a cyclic-AMP-responsive 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- and cyclic AMP-inducible promoters. Proc. Natl. Acad. Sci. USA 85: 3396-3400.

CHROMOSOMAL LOCATION

Genetic locus: CREB1 (human) mapping to 2q33.3.

PRODUCT

CREB-1 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 CREB-1 shRNA Plasmid (h): sc-29281-SH and CREB-1 shRNA (h) Lentiviral Particles: sc-29281-V as alternate gene silencing products.

For independent verification of CREB-1 (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-29281A, sc-29281B and sc-29281C.

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

CREB-1 siRNA (h) is recommended for the inhibition of CREB-1 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

CREB-1 (24H4B): sc-271 is recommended as a control antibody for monitoring of CREB-1 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 CREB-1 gene expression knockdown using RT-PCR Primer: CREB-1 (h)-PR: sc-29281-PR (20 µl, 522 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Belkhiri, A., et al. 2008. t-Darpp promotes cancer cell survival by up-regulation of Bcl-2 through Akt-dependent mechanism. Cancer Res. 68: 395-403.
2. Makhov, P., et al. 2009. Transcriptional regulation of the major zinc uptake protein hZip1 in prostate cancer cells. Gene 431: 39-46.
3. Park, J.K., et al. 2010. ICAM-3 enhances the migratory and invasive potential of human non-small cell lung cancer cells by inducing MMP-2 and MMP-9 via Akt and CREB. Int. J. Oncol. 36: 181-192.
4. Eneling, K., et al. 2012. Salt-inducible kinase 1 regulates E-cadherin expression and intercellular junction stability. FASEB J. 26: 3230-3239.
5. Liu, W.H., et al. 2013. p38 MAPK/PP2Acα/TTP pathway on the connection of TNF-α and caspases activation on hydroquinone-induced apoptosis. Carcinogenesis 34: 818-827.
6. Ge, D., et al. 2014. Finding ATF4/p75NTR/IL-8 signal pathway in endothelial-mesenchymal transition by safrole oxide. PLoS ONE 9: e99378.
7. Xiong, J., et al. 2015. PKA/CREB regulates the constitutive promoter activity of the USP22 gene. Oncol. Rep. 33: 1505-1511.
8. Lypova, N., et al. 2019. Increased 6-phosphofructo-2-kinase/fructose-2,6-bisphosphatase-3 activity in response to EGFR signaling contributes to non-small cell lung cancer cell survival. J. Biol. Chem. 294: 10530-10543.

RESEARCH USE

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