SANTA CRUZ BIOTECHNOLOGY, INC.

CREB-1 siRNA (m): sc-35111

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 coactivator 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., et al. 1988. Interaction of a common cellular transcription factor, ATF, with regulatory elements in both Ela- and cyclic AMP-inducible promoters. Proc. Natl. Acad. Sci. USA 85: 3396-3400.

CHROMOSOMAL LOCATION

Genetic locus: Creb1 (mouse) mapping to 1 C2.

PRODUCT

CREB-1 siRNA (m) 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 (m): sc-35111-SH and CREB-1 shRNA (m) Lentiviral Particles: sc-35111-V as alternate gene silencing products.

For independent verification of CREB-1 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-35111A, sc-35111B and sc-35111C.

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 (m) is recommended for the inhibition of CREB-1 expression in mouse 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 (X-12): sc-240 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 (m)-PR: sc-35111-PR (20 µl, 321 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Kim, S.J., et al. 2008. Glucose-dependent insulinotropic polypeptide-mediated upregulation of β-cell antiapoptotic Bcl-2 gene expression is coordinated by cyclic AMP (cAMP) response element binding protein (CREB) and cAMP-responsive CREB coactivator 2. Mol. Cell. Biol. 28: 1644-1656.
2. Park, S.Y., et al. 2015. Neuroprotective effects of α-iso-cubebenol on glutamate-induced neurotoxicity. Environ. Toxicol. Pharmacol. 40: 549-556.
3. Giri, J., et al. 2016. *Leishmania donovani* exploits myeloid cell leukemia 1 (MCL-1) protein to prevent mitochondria-dependent host cell apoptosis. J. Biol. Chem. 291: 3496-3507.
4. Cong, Q., et al. 2017. p38α MAPK regulates proliferation and differentiation of osteoclast progenitors and bone remodeling in an aging-dependent manner. Sci. Rep. 7: 45964.
5. Kim, M.K., et al. 2018. Involvement of gastrin-releasing peptide receptor in the regulation of adipocyte differentiation in 3T3-L1 cells. Int. J. Mol. Sci. 19: 3971.
6. Li, J., et al. 2020. CREB activity is required for mTORC1 signaling-induced primordial follicle activation in mice. Histochem. Cell Biol. 154: 287-299.
7. Yang, Y., et al. 2021. CREB participates in paclitaxel-induced neuropathic pain genesis through transcriptional activation of Dnmt3a in primary sensory neurons. Neurotherapeutics 18: 586-600.

RESEARCH USE

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