

ATF-1 (39-271): sc-4006

BACKGROUND

Eukaryotic gene transcription is regulated by sequence specific transcription factors which bind modular cis acting promotor and enhancer elements. The cAMP response element (CRE), one of the best studies of such elements, consists of the palindromic octanucleotide TGACGTCA. Several CRE binding proteins have been identified within the ATF/CREB family; the best characterized 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 with members of the AP-1 transcription factor family.

REFERENCES

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2. Lin, Y. and Green, M.R. 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.
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-BP1 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 cyclic AMP response element-binding protein which is distinct from CREB and expressed preferentially in brain. *Mol. Cell. Biol.* 10: 1347-1357.
7. Hai, T. and Curran, T. 1991. Cross-family dimerization of transcription factors Fos/Jun and ATF/CREB alters DNA binding specificity. *Proc. Natl. Acad. Sci. USA* 88: 3720-3724.
8. Karpinski, B.A., et al. 1992. Molecular cloning of human CREB-2: An ATF/CREB transcription factor that can negatively regulate transcription from the cAMP response element. *Proc. Natl. Acad. Sci. USA* 89: 4820-4824.

CHROMOSOMAL LOCATION

Genetic locus: ATF1 (human) mapping to 12q13.13; Atf1 (mouse) mapping to 15 F1.

SOURCE

ATF-1 (39-271) is expressed in *E. coli* as a 34 kDa protein corresponding to amino acids 39-271 mapping within an amino terminal domain of ATF-1 of human origin.

PRODUCT

ATF-1 (39-271) is purified from bacterial lysates (>98%) by Ni⁺⁺ affinity chromatography; supplied as 50 µg purified protein in PBS containing 5 mM DTT and 50% glycerol.

Also available as a Western blotting control; 10 µg in 0.1 ml SDS-PAGE loading buffer, ATF-1 (39-271): sc-4006 WB.

APPLICATIONS

ATF-1 (39-271) heterodimerizes with CREB and CREM, binds DNA constitutively and is recommended as a control for gel shift studies using sc-2504 and sc-2517 oligonucleotide probes with TransCruz gel supershift antibody sc-270 X.

ATF-1 (39-271): sc-4006 WB is suitable as a Western blotting control for sc-270.

SELECT PRODUCT CITATIONS

1. Kerry, J., et al. 1997. The role of ATF in regulating the human cytomegalovirus DNA polymerase (UL54) promotor during viral infection. *J. Virol.* 71: 2120-2126.
2. Zhang, F., et al. 1998. Regulation of the activity of IFN-γ promoter elements during Th cell differentiation. *J. Immunol.* 161: 6105-6112.
3. Zhang, F., et al. 1999. TCR and IL-12 receptor signals cooperate to activate an individual response element in the IFN-γ promoter in effector Th cells. *J. Immunol.* 163: 728-735.
4. Mayo, L.D., et al. 2001. Vascular endothelial cell growth factor activates CRE-binding protein by signaling through the KDR receptor tyrosine kinase. *J. Biol. Chem.* 276: 25184-25189.
5. Kim, S. 2004. Characterization of the prothrombin gene expression during nerve differentiation. *Biochim. Biophys. Acta* 1679: 1-9.

STORAGE

Store ATF-1 (39-271): sc-4006 and sc-4006 WB at -20° C; stable for one year from the date of shipment.

RESEARCH USE

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

PROTOCOLS

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