



crp (C-12): sc-136634

BACKGROUND

Escherichia coli contains more than 250 known promoters that must be activated prior to transcription. cAMP receptor protein (crp), also known as cAMP regulatory protein and catabolite gene activator, is a 210 amino acid *E. coli* protein that forms a complex with cyclic AMP and binds to specific DNA sites near the promoter, resulting in homodimeric transcription activation of more than a hundred *E. coli* promoters. Acting as a negative regulator against its own synthesis, crp regulates transcription of several catabolite-sensitive operons. Crp activates transcription by making multiple interactions with RNA polymerase. Containing one cyclic nucleotide binding domain and one HTH crp-type DNA binding domain, crp binds DNA as a dimer to induce a severe bend in the DNA. This formation is a regulatory mechanism of crp gene expression that plays a major role in determining the molecular mechanism in gene transcription.

REFERENCES

- McKay, D.B., Weber, I.T. and Steitz, T.A. 1982. Structure of catabolite gene activator protein at 2.9-A resolution. Incorporation of amino acid sequence and interactions with cyclic AMP. *J. Biol. Chem.* 257: 9518-9524.
- Aiba, H., Fujimoto, S. and Ozaki, N. 1982. Molecular cloning and nucleotide sequencing of the gene for *E. coli* cAMP receptor protein. *Nucleic Acids Res.* 10: 1345-1361.
- Weber, I.T. and Steitz, T.A. 1987. Structure of a complex of catabolite gene activator protein and cyclic AMP refined at 2.5 Å resolution. *J. Mol. Biol.* 198: 311-326.
- Harley, C.B. and Reynolds, R.P. 1987. Analysis of *E. coli* promoter sequences. *Nucleic Acids Res.* 15: 2343-2361.
- Schultz, S.C., Shields, G.C. and Steitz, T.A. 1991. Crystal structure of a CAP-DNA complex: the DNA is bent by 90 degrees. *Science* 253: 1001-1007.
- Blattner, F.R., Plunkett, G., Bloch, C.A., Perna, N.T., Burland, V., Riley, M., Collado-Vides, J., Glasner, J.D., Rode, C.K., Mayhew, G.F., Gregor, J., Davis, N.W., Kirkpatrick, H.A., Goeden, M.A., Rose, D.J., Mau, B. and Shao, Y. 1997. The complete genome sequence of *Escherichia coli* K-12. *Science* 277: 1453-1462.
- Passner, J.M., Schultz, S.C. and Steitz, T.A. 2000. Modeling the cAMP-induced allosteric transition using the crystal structure of CAP-cAMP at 2.1 Å resolution. *J. Mol. Biol.* 304: 847-859.
- Lin, S.H. and Lee, J.C. 2003. Determinants of DNA bending in the DNA-cyclic AMP receptor protein complexes in *Escherichia coli*. *Biochemistry* 42: 4809-4818.
- Hayashi, K., Morooka, N., Yamamoto, Y., Fujita, K., Isono, K., Choi, S., Ohtsubo, E., Baba, T., Wanner, B.L., Mori, H. and Horiuchi, T. 2006. Highly accurate genome sequences of *Escherichia coli* K-12 strains MG1655 and W3110. *Mol. Syst. Biol.* 2: 2006.0007.

STORAGE

Store at 4° C, ****DO NOT FREEZE****. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

SOURCE

crp (C-12) is an affinity purified rabbit polyclonal antibody raised against a peptide mapping near the C-terminus of crp of *E. coli* origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-136634 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

Available as TransCruz reagent for Gel Supershift and ChIP applications, sc-136634 X, 200 µg/0.1 ml.

APPLICATIONS

crp (C-12) is recommended for detection of crp of *E. coli* origin by Western Blotting (starting dilution 1:100, dilution range 1:50-1:500), immunofluorescence (starting dilution 1:25, dilution range 1:25-1:250) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

crp (C-12) X TransCruz antibody is recommended for Gel Supershift and ChIP applications.

Molecular Weight of crp: 24 kDa.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

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.