SANTA CRUZ BIOTECHNOLOGY, INC.

p-UBF (Ser 484)-R: sc-21638-R

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Upstream binding factor (UBF) is a nucleolar transcription factor that is a member of the HMG-box DNA-binding protein family and is required for the expression of 18S, 5.8S and 28S ribosomal RNA. UBF activity is regulated in a cell cycle-dependent manner by phosphorylation at Serine residues near the C terminus. Activation of UBF requires phosphorylation at multiple residues, including Ser 388, Ser 484 and Ser 637. Phosphorylation of UBF at Serine 484 by G_1-specific cyclin-dependent kinase (cdk)/cyclin complexes is necessary to activate rDNA transcription. After G_1, UBF is phosphorylated by Cdk2/cyclin E and Cdk2/cyclin A at Serine 388. UBF phosphorylation induces transactivation of RNA polymerase I. Specifically, Serine 388 phosphorylation is required for the interaction between RNA polymerase I and UBF. The human UBF gene maps to the BRCA1 region of chromosome 17q21.3 and encodes a 764 amino acid protein. Alternative splicing yields 2 isoforms of UBF, which differ by 37 amino acids.

REFERENCES

1. Bell, S.P., et al. 1988. Functional cooperativity between transcription factors UBF1 and SL1 mediates human ribosomal RNA synthesis. Science 241: 1192-1197.
2. Jantzen, H.M., et al. 1990. Nucleolar transcription factor hUBF contains a DNA-binding motif with homology to HMG proteins. Nature 344: 830-836.
3. O'Mahony, D.J., et al. 1992. Differential phosphorylation and localization of the transcription factor UBF *in vivo* in response to serum deprivation. *In vitro* dephosphoryl-ation of UBF reduces its transactivation properties. J. Biol. Chem. 267: 35-38.
4. Jones, K.A., et al. 1995. Localization of the human RNA polymerase I transcription factor gene (UBTF) to the D17S183 locus on chromosome 17q21 and construction of a long-range restriction map of the region. Genomics 30: 602-604.
5. Voit, R., et al. 1995. Activation of mammalian ribosomal gene transcription requires phosphorylation of the nucleolar transcription factor UBF. Nucleic Acids Res. 23: 2593-2599.
6. Matera, A.G., et al. 1997. Molecular cloning of the RNA polymerase I transcription factor hUBF/NOR-90 (UBTF) gene and localization to 17q21.3 by fluorescence *in situ* hybridization and radiation hybrid mapping. Genomics 41: 135-138.
7. Voit, R., et al. 1999. Phosphorylation by G_1-specific Cdk/cyclin complexes activates the nucleolar transcription factor UBF. EMBO J. 18: 1891-1899.
8. Voit, R. and Grummt, I. 2001. Phosphorylation of UBF at Serine 388 is required for interaction with RNA polymerase I and activation of rDNA transcription. Proc. Natl. Acad. Sci. USA 98: 13631-13636.

CHROMOSOMAL LOCATION

Genetic locus: UBTF (human) mapping to 17q21.3; Ubtf (mouse) mapping to 11 D.

RESEARCH USE

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

SOURCE

p-UBF (Ser 484)-R is a rabbit polyclonal antibody raised against a short amino acid sequence containing Ser 484 phosphorylated UBF of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-21638 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

p-UBF (Ser 484)-R is recommended for detection of Ser 484 phosphorylated UBF of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

p-UBF (Ser 484)-R is also recommended for detection of correspondingly phosphorylated UBF in additional species, including canine, bovine and porcine.

Suitable for use as control antibody for UBF siRNA (h): sc-29514, UBF siRNA (m): sc-29515, UBF shRNA Plasmid (h): sc-29514-SH, UBF shRNA Plasmid (m): sc-29515-SH, UBF shRNA (h) Lentiviral Particles: sc-29514-V and UBF shRNA (m) Lentiviral Particles: sc-29515-V.

Molecular Weight of p-UBF isoforms: 94/97 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 B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Western Blotting Luminol Reagent: sc-2048 and Lambda Phosphatase: sc-200312A. 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.

SELECT PRODUCT CITATIONS

1. Ayrault, O., et al. 2006. Human tumor suppressor $p14^{ARF}$ negatively regulates rRNA transcription and inhibits UBF1 transcription factor phosphorylation. Oncogene 25: 7577-7586.
2. Young, D.W., et al. 2007. Mitotic occupancy and lineage-specific transcriptional control of rRNA genes by RUNX2. Nature 445: 442-446.
3. Zhang, Y., et al. 2011. Identification of DHX33 as a mediator of rRNA synthesis and cell growth. Mol. Cell. Biol. 31: 4676-4691.

STORAGE

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