

UBF siRNA (m): sc-29515

BACKGROUND

The transcription of ribosomal RNA genes by RNA polymerase I (Pol I) is tightly coordinated with the growth state of the cell. In addition to Pol I, transcription of ribosomal genes requires the *trans*-activating factor UBF (upstream binding factor). UBF functions by binding to DNA elements within the RNA gene promoter and enhancer regions and directly associating with Pol I, tethering it to the promoter complex. Two UBF proteins arise from the same gene as a result of alternative mRNA splicings. UBF activity is regulated by several dependent casein kinase II phosphorylates at the carboxy terminus of UBF on serine residues. The retinoblastoma susceptibility gene product, Rb, when not bound to E2F family members, inhibits UBF activity. Expression of RNA may also be negatively regulated by the Ku antigens.

REFERENCES

1. Jantzen, H.M., et al. 1990. Nucleolar transcription factor hUBF contains a DNA-binding motif with homology to HMG proteins. *Nature* 344: 830-836.
2. Voit, R., et al. 1992. The nucleolar transcription factor mUBF is phosphorylated by casein kinase II in the C-terminal hyperacidic tail which is essential for transactivation. *EMBO J.* 11: 2211-2218.
3. Kuhn, A., et al. 1993. The nucleolar transcription activator UBF relieves Ku antigen-mediated repression of mouse ribosomal gene transcription. *Nucleic Acids Res.* 21: 2057-2063.
4. Codony-Servat, J., et al. 1996. The two isoforms of the 90 kDa nucleolus organizer region autoantigen (upstream binding factor) bind with different avidity to DNA modified by the antitumor drug cisplatin. *Biochem. Pharmacol.* 51: 1131-1136.

CHROMOSOMAL LOCATION

Genetic locus: *Ubt1* (mouse) mapping to 11 D.

PRODUCT

UBF 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see UBF shRNA Plasmid (m): sc-29515-SH and UBF shRNA (m) Lentiviral Particles: sc-29515-V as alternate gene silencing products.

For independent verification of UBF (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-29515A, sc-29515B and sc-29515C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

UBF siRNA (m) is recommended for the inhibition of UBF 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 μ M in 66 μ l. 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

UBF (F-9): sc-13125 is recommended as a control antibody for monitoring of UBF 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor UBF gene expression knockdown using RT-PCR Primer: UBF (m)-PR: sc-29515-PR (20 μ l, 578 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Xie, Q., et al. 2017. Folate deficiency facilitates recruitment of upstream binding factor to hot spots of DNA double-strand breaks of rRNA genes and promotes its transcription. *Nucleic Acids Res.* 45: 2472-2489.

RESEARCH USE

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

PROTOCOLS

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