

# SBP-2 siRNA (h): sc-106885

## BACKGROUND

Eukaryotes require a selenocysteine (Sec) insertion sequence (SECIS) element in the 3' untranslated region of the mRNA to decode the UGA codon as Sec. SECIS-binding protein 2 (SBP-2) specifically binds selenoprotein mRNAs to form a functional complex and is essential for the insertion of Sec into selenoproteins. Purified SBP-2 interacts specifically with the SECIS element in the phospholipid hydroperoxide glutathione peroxidase mRNA. SBP-2 shows binding activity in the liver and testis as well as hepatoma cells. SBP-2 binds to a conserved RNA binding domain shared with several ribosomal proteins and eukaryotic translation termination release factor 1. A second domain located N-terminal to the RNA binding domain required for Sec insertion allows SBP-2 to stably associate with the ribosomal fraction of cells. SBP-2 preferentially stimulates incorporation directed by the selenoprotein P and phospholipid hydroperoxide glutathione peroxidase SECIS elements. SBP-2 may have a distinct function in selecting the ribosomes for Sec insertion.

## REFERENCES

1. Berry, M.J., et al. 1991. Recognition of UGA as a selenocysteine codon in type 1 deiodinase requires sequences in the 3' untranslated region. *Nature* 353: 273-276.
2. Lesoon, A., et al. 1997. An RNA-binding protein recognizes a mammalian selenocysteine insertion sequence element required for cotranslational incorporation of selenocysteine. *Mol. Cell. Biol.* 17: 1977-1985.
3. Copeland, P.R. and Driscoll, D.M. 1999. Purification, redox sensitivity, and RNA binding properties of SECIS-binding protein 2, a protein involved in selenoprotein biosynthesis. *J. Biol. Chem.* 274: 25447-25454.
4. Copeland, P., et al. 2000. A novel RNA binding protein, SBP-2, is required for the translation of mammalian selenoprotein mRNAs. *EMBO J.* 19: 306-314.
5. Low, S.C., et al. 2000. SECIS-SBP-2 interactions dictate selenocysteine incorporation efficiency and selenoprotein hierarchy. *EMBO J.* 19: 6882-6890.
6. Copeland, P.R., et al. 2001. Insight into mammalian selenocysteine insertion: domain structure and ribosome binding properties of Sec insertion sequence binding protein 2. *Mol. Cell. Biol.* 21: 1491-1498.

## CHROMOSOMAL LOCATION

Genetic locus: SECISBP2 (human) mapping to 9q22.2.

## PRODUCT

SBP-2 siRNA (h) 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SBP-2 shRNA Plasmid (h): sc-106885-SH and SBP-2 shRNA (h) Lentiviral Particles: sc-106885-V as alternate gene silencing products.

For independent verification of SBP-2 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-106885A, sc-106885B and sc-106885C.

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

## APPLICATIONS

SBP-2 siRNA (h) is recommended for the inhibition of SBP-2 expression in human 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  $\mu$ M in 66  $\mu$ 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

SBP-2 (C-10): sc-393651 is recommended as a control antibody for monitoring of SBP-2 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 $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>™</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor SBP-2 gene expression knockdown using RT-PCR Primer: SBP-2 (h)-PR: sc-106885-PR (20  $\mu$ l, 470 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.