

PSF siRNA (h): sc-38304



The Power to Question

BACKGROUND

Pre-mRNA splicing is a critical step in the post-translational regulation of gene expression. The process of removing intron sequences from mRNA is a two-step enzymatic reaction that requires the action of the spliceosome, a large multicomponent ribonucleoprotein complex. The polypyrimidine tract-binding protein (PTB)-associated splicing factor (PSF) is a ubiquitously expressed protein that forms a complex with PTB, also designated hnRNP I, which is required for early spliceosome formation and is essential for catalytic step II. The PSF protein contains two RNA recognition motifs (RRMs), a proline- and glutamine-rich amino terminal domain, and two carboxy-terminal nuclear localization signals. PSF is localized to the nucleus in punctate structures called speckles, which are absent from nucleoli. The localization of PSF to speckles is dependent upon the presence of the second RRM motif. PSF also can associate with the DNA binding domains (DBDs) of thyroid hormone receptors and retinoic acid receptors, where it acts as a repressor by recruiting HDACs to the DBDs. PSF is expressed in neurons during development and may be involved in neuronal differentiation and maturation. PSF is proteolytically cleaved to produce a shorter fragment in myeloid cells.

REFERENCES

1. Patton, J.G., et al. 1993. Cloning and characterization of PSF, a novel pre-mRNA splicing factor. *Genes Dev.* 7: 393-406.
2. Gozani, O., et al. 1994. A novel set of spliceosome-associated proteins and the essential splicing factor PSF bind stably to pre-mRNA prior to catalytic step II of the splicing reaction. *EMBO J.* 13: 3356-3367.

CHROMOSOMAL LOCATION

Genetic locus: SFPO (human) mapping to 1p34.3.

PRODUCT

PSF 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see PSF shRNA Plasmid (h): sc-38304-SH and PSF shRNA (h) Lentiviral Particles: sc-38304-V as alternate gene silencing products.

For independent verification of PSF (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-38304A, sc-38304B and sc-38304C.

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

PSF siRNA (h) is recommended for the inhibition of PSF 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 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

PSF (D-8): sc-271796 is recommended as a control antibody for monitoring of PSF 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 PSF gene expression knockdown using RT-PCR Primer: PSF (h)-PR: sc-38304-PR (20 μ l, 467 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Tsukahara, T., et al. 2013. PSF knockdown enhances apoptosis via downregulation of LC3B in human colon cancer cells. *Biomed Res. Int.* 2013: 204973.
2. Tsukahara, T., et al. 2013. PTB-associated splicing factor (PSF) is a PPAR γ -binding protein and growth regulator of colon cancer cells. *PLoS ONE* 8: e58749.
3. Rhee, D.K., et al. 2017. SFPO, a multifunctional nuclear protein, regulates the transcription of PDE3A. *Biosci. Rep.* 37: BSR20170975.
4. Kovina, A.P., et al. 2024. Disruption of RNA splicing increases vulnerability of cells to DNA-PK inhibitors. *Int. J. Mol. Sci.* 25: 11810.

RESEARCH USE

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