SANTA CRUZ BIOTECHNOLOGY, INC.

HSF1 siRNA (m): sc-35612

BACKGROUND

Prokaryotic and eukaryotic cells respond to thermal and chemical stress by inducing a group of genes collectively designated heat shock genes. In eukaryotes, this gene expression is regulated primarily at the transcription level. Heat shock transcription factors 1 and 2 (HSF1 and HSF2), also designated HSTF1 and HSTF2, are involved in this regulation. HSF1 and HSF2 are upregulated by estrogen at both the mRNA and protein level. HSF1 is normally found as a monomer, whose transcriptional activity is repressed by constitutive phosphorylation. Upon activation, HSF1 forms trimers, gains DNA binding activity and is translocated to the nucleus. HSF2 activity is associated with differentiation and development and, like HSF1, binds DNA as a trimer. Both HSF1 and HSF2 are known to be induced by proteasome inhibitors of the ubiquitin pathway.

CHROMOSOMAL LOCATION

Genetic locus: Hsf1 (mouse) mapping to 15 D3.

PRODUCT

HSF1 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see HSF1 shRNA Plasmid (m): sc-35612-SH and HSF1 shRNA (m) Lentiviral Particles: sc-35612-V as alternate gene silencing products.

For independent verification of HSF1 (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-35612A, sc-35612B and sc-35612C.

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 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

HSF1 siRNA (m) is recommended for the inhibition of HSF1 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 µM in 66 µl. 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

HSF1 (E-4): sc-17757 is recommended as a control antibody for monitoring of HSF1 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 HSF1 gene expression knockdown using RT-PCR Primer: HSF1 (m)-PR: sc-35612-PR (20 µl, 449 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Pignataro, L., et al. 2007. Alcohol regulates gene expression in neurons via activation of heat shock factor 1. J. Neurosci. 27: 12957-12966.
2. Varodayan, F.P. and Harrison, N.L. 2013. HSF1 transcriptional activity mediates alcohol induction of Vamp2 expression and GABA release. Front. Integr. Neurosci. 7: 89.
3. Huang, C., et al. 2015. Requirement for endogenous heat shock factor 1 in inducible nitric oxide synthase induction in murine microglia. J. Neuroinflammation 12: 189.
4. Intihar, T.A., et al. 2019. Mitochondrial dysfunction in Huntington's disease; interplay between HSF1, p53 and PGC-1α transcription factors. Front. Cell. Neurosci. 13: 103.
5. Lee, Y.Y., et al. 2021. Heat shock factor 1 prevents age-related hearing loss by decreasing endoplasmic reticulum stress. Cells 10: 2454.
6. Inouye, S., et al. 2022. Heat shock-induced heme oxygenase-1 expression in a mouse hepatoma cell line is dependent on HSF1 and modified by NRF2 and BACH1. Genes Cells 27: 719-730.
7. Du, P., et al. 2024. Astragaloside IV ameliorates pressure overload-induced heart failure by enhancing angiogenesis through HSF1/VEGF pathway. Heliyon 10: e37019.

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.