

# HSF1 siRNA (h): sc-35611

## 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 (human) mapping to 8q24.3.

## PRODUCT

HSF1 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 HSF1 shRNA Plasmid (h): sc-35611-SH and HSF1 shRNA (h) Lentiviral Particles: sc-35611-V as alternate gene silencing products.

For independent verification of HSF1 (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-35611A, sc-35611B and sc-35611C.

## 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

HSF1 siRNA (h) is recommended for the inhibition of HSF1 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

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).

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor HSF1 gene expression knockdown using RT-PCR Primer: HSF1 (h)-PR: sc-35611-PR (20  $\mu$ l, 466 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

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2. Harrison, E.M., et al. 2008. Heat shock protein 90-binding agents protect renal cells from oxidative stress and reduce kidney ischemia-reperfusion injury. *Am. J. Physiol. Renal Physiol.* 295: F397-F405.
3. Yun, C.H., et al. 2010. Geldanamycin inhibits TGF- $\beta$  signaling through induction of HSP 70. *Arch. Biochem. Biophys.* 495: 8-13.
4. Shibata, T., et al. 2011. Transthiocarbamylation of proteins by thiolated isothiocyanates. *J. Biol. Chem.* 286: 42150-42161.
5. Hensen, S.M., et al. 2013. A delayed antioxidant response in heat-stressed cells expressing a non-DNA binding HSF1 mutant. *Cell Stress Chaperones* 18: 455-473.
6. Son, T.W., et al. 2013. Netrin-1 protects hypoxia-induced mitochondrial apoptosis through HSP 27 expression via DCC- and integrin  $\alpha$ 6 $\beta$ 4-dependent Akt, GSK-3 $\beta$ , and HSF-1 in mesenchymal stem cells. *Cell Death Dis.* 4: e563.
7. Benderska, N., et al. 2014. DAPK-HSF1 interaction as a positive-feedback mechanism stimulating TNF-induced apoptosis in colorectal cancer cells. *J. Cell Sci.* 127: 5273-5287.
8. Liu, C.C., et al. 2014. 14-3-3 $\sigma$  induces heat shock protein 70 expression in hepatocellular carcinoma. *BMC Cancer* 14: 425.
9. Granato, M., et al. 2015. Tyrosine kinase inhibitor tyrphostin AG490 triggers both apoptosis and autophagy by reducing HSF1 and Mcl-1 in PEL cells. *Cancer Lett.* 366: 191-197.
10. Lelj-Garolla, B., et al. 2015. HSP 27 inhibition with OGX-427 sensitizes non-small cell lung cancer cells to erlotinib and chemotherapy. *Mol. Cancer Ther.* 14: 1107-1116.

## 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.