SANTA CRUZ BIOTECHNOLOGY, INC.

HSP 27 siRNA (h): sc-29350

BACKGROUND

The heat shock proteins (HSPs) comprise a group of highly conserved, abundantly expressed proteins with diverse functions, including the assembly and sequestering of multiprotein complexes, transportation of nascent polypeptide chains across cellular membranes and regulation of protein folding. Heat shock proteins (also known as molecular chaperones) fall into six general families: HSP 90, HSP 70, HSP 60, the low molecular weight HSPs, the immunophilins and the HSP 110 family. The low molecular weight family includes HSP 10, HSP 20, HSP 27, HSP 32 and HSP 40. HSP 27 is a constitutively expressed cytoplasmic protein that co-localizes to the nucleus upon stress induced by insult. Heat, cytokines and hormones are among the factors that stimulate the synthesis of HSP 27. *In vitro,* HSP 27 becomes highly phosphorylated following exposure to stress. The discovery that HSP 27 is regulated by hormones such as estrogen has led to studies establishing a relationship between HSP 27 and breast cancer.

REFERENCES

1. Ritossa, F. 1962. A new puffing pattern induced by temperature shock and DNP in *Drosophila*. Experientia 18: 571-573.
2. Lemeaux, P.G., et al. 1978. Transient rates of synthesis of individual polypeptides in *E. coli* following temperature shifts. Cell 13: 427-434.
3. Kelley, P., et al. 1978. The effect of amino acid analogues and heat shock on gene expression in chicken embryo fibroblasts. Cell 15: 1277-1286.

CHROMOSOMAL LOCATION

Genetic locus: HSPB1 (human) mapping to 7q11.23.

PRODUCT

HSP 27 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see HSP 27 shRNA Plasmid (h): sc-29350-SH and HSP 27 shRNA (h) Lentiviral Particles: sc-29350-V as alternate gene silencing products.

For independent verification of HSP 27 (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-29350A, sc-29350B and sc-29350C.

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

HSP 27 siRNA (h) is recommended for the inhibition of HSP 27 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 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

HSP 27 (F-4): sc-13132 is recommended as a control antibody for monitoring of HSP 27 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 HSP 27 gene expression knockdown using RT-PCR Primer: HSP 27 (h)-PR: sc-29350-PR (20 µl, 567 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Timofeeva, O.A., et al. 2006. Serine-phosphorylated Stat1 is a prosurvival factor in Wilms' tumor pathogenesis. Oncogene 25: 7555-7564.
2. Havasi, A., et al. 2009. HSP 27 inhibits sublethal, Src-mediated renal epithelial cell injury. Am. J. Physiol. Renal Physiol. 297: F760-F768.
3. Chen, S.F., et al. 2012. Quercetin suppresses drug-resistant spheres via the p38 MAPK-HSP 27 apoptotic pathway in oral cancer cells. PLoS ONE 7: e49275.
4. 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-3β, and HSF-1 in mesenchymal stem cells. Cell Death Dis. 4: e563.
5. Li, J., et al. 2016. Quercetin blocks t-AUCB-induced autophagy by HSP 27 and ATG7 inhibition in glioblastoma cells *in vitro*. J. Neurooncol. 129: 39-45.
6. Netsirisawan, P., et al. 2018. Decreasing O-GlcNAcylation affects the malignant transformation of MCF7 cells via HSP 27 expression and its O-GlcNAc modification. Oncol. Rep. 40: 2193-2205.
7. Shokrollahi, E., et al. 2019. Treatment of human neuroblastoma cell line SH-SY5Y with HSP 27 siRNA tagged-exosomes decreased differentiation rate into mature neurons. J. Cell. Physiol. 234: 21005-21013.

RESEARCH USE

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