SANTA CRUZ BIOTECHNOLOGY, INC.

HSC 70 siRNA (h): sc-29349

BACKGROUND

The HSP 70 family is composed of four highly conserved proteins: HSP 70, HSC 70, GRP 75 and GRP 78. These proteins serve a variety of roles: they act as molecular chaperones facilitating the assembly of multi-protein complexes, participate in the translocation of polypeptides across cell membranes and to the nucleus, and aid in the proper folding of nascent polypeptide chains. All members of the family, except HSP 70, are constitutively expressed in primate cells. HSP 70 expression is strongly induced in response to heat stress. HSP 70 and HSC 70 play key roles in the cytosolic endoplasmic reticulum and mitochondrial import machinery and are found in both the cytosol and nucleus of mammalian cells. Both HSP 70 and HSC 70 are involved in the chaperoning of nascent polypeptide chains and in protecting cells against the accumulation of improperly folded proteins. GRP 78 is localized in the endoplasmic reticulum, where it receives imported secretory proteins and is involved in the folding and translocation of nascent peptide chains. GRP 75 expression is restricted to the mitochondrial matrix and aids in the translocation and folding of nascent polypeptide chains of both nuclear and mitochondrial origin. GRP 75 and GRP 78 are unresponsive to heat stress and are induced by glucose deprivation. It has been postulated that members of the HSP 70 family act as force-generating motors, relying on the hydrolysis of ATP for their activity.

CHROMOSOMAL LOCATION

Genetic locus: HSPA8 (human) mapping to 11q24.1.

PRODUCT

HSC 70 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 HSC 70 shRNA Plasmid (h): sc-29349-SH and HSC 70 shRNA (h) Lentiviral Particles: sc-29349-V as alternate gene silencing products.

For independent verification of HSC 70 (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-29349A, sc-29349B and sc-29349C.

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

HSC 70 siRNA (h) is recommended for the inhibition of HSC 70 expression in human cells.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

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

HSC 70 (B-6): sc-7298 is recommended as a control antibody for monitoring of HSC 70 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 HSC 70 gene expression knockdown using RT-PCR Primer: HSC 70 (h)-PR: sc-29349-PR (20 µl, 518 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Watanabe, K., et al. 2006. Identification of HSC 70 as an influenza virus matrix protein (M1) binding factor involved in the virus life cycle. FEBS Lett. 580: 5785-5790.
2. Jorgensen, N.D., et al. 2007. HSP 70/HSC 70 regulates the effect phosphorylation has on stabilizing ataxin-1. J. Neurochem. 102: 2040-2048.
3. Pocaly, M., et al. 2008. Proteomic analysis of an imatinib-resistant K562 cell line highlights opposing roles of heat shock cognate 70 and heat shock 70 proteins in resistance. Proteomics 8: 2394-2406.
4. Khachatoorian, R., et al. 2014. The NS5A-binding heat shock proteins HSC70 and HSP70 play distinct roles in the hepatitis C viral life cycle. Virology 454-455: 118-127.
5. Khachatoorian, R., et al. 2018. HSP 70 copurifies with Zika virus particles. Virology 522: 228-233.
6. Burress, H., et al. 2019. HSC 70 and HSP 90 chaperones perform complementary roles in translocation of the cholera toxin A1 subunit from the endoplasmic reticulum to the cytosol. J. Biol. Chem. 294: 12122-12131.
7. Raghawan, A.K., et al. 2022. Cold-induced loss of interaction with HSC 70 triggers inflammasome activity of familial cold autoinflammatory syndrome-causing mutants of NLRP3. Biochem. Biophys. Res. Commun. 641: 42-49.
8. Le, D.D.T., et al. 2023. PIP5Kγ mediates PI(4,5)P2/Merlin/LATS1 signaling activation and interplays with Hsc70 in hippo-YAP pathway regulation. Int. J. Mol. Sci. 24: 14786.

RESEARCH USE

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