SANTA CRUZ BIOTECHNOLOGY, INC.

HSP 78 siRNA (h): sc-96339

BACKGROUND

HSP 78, also known as CLPB (caseinolytic peptidase B protein homolog) or SKD3 (suppressor of potassium transport defect 3), is a 707 amino acid protein that belongs to the clpA/clpB family. Containing four ANK repeats, HSP 78 may be involved in the regulation of ATPase and the secretion/protein trafficking process. Existing as two alternatively spliced isoforms, HSP 78 maps to human chromosome 11q13.4 and mouse chromosome 7 E3. Human chromosome 11 houses over 1,400 genes, comprises nearly 4% of the human genome and is considered a gene and disease association dense chromosome. Jervell and Lange-Nielsen syndrome, Jacobsen syndrome, Niemann-Pick disease, hereditary angioedema and Smith-Lemli-Opitz syndrome are associated with defects in genes that maps to chromosome 11.

REFERENCES

1. Perier, F., Radeke, C.M., Raab-Graham, K.F. and Vandenberg, C.A. 1995. Expression of a putative ATPase suppresses the growth defect of a yeast potassium transport mutant: identification of a mammalian member of the Clp/HSP104 family. Gene 152: 157-163.
2. Rottgers, K., Zufall, N., Guiard, B. and Voos, W. 2002. The ClpB homolog HSP 78 is required for the efficient degradation of proteins in the mitochondrial matrix. J. Biol. Chem. 277: 45829-45837.
3. Jira, P.E., Waterham, H.R., Wanders, R.J., Smeitink, J.A., Sengers, R.C. and Wevers, R.A. 2003. Smith-Lemli-Opitz syndrome and the DHCR7 gene. Ann. Hum. Genet. 67: 269-280.
4. Lewandowska, A., Gierszewska, M., Marszalek, J. and Liberek, K. 2006. HSP 78 chaperone functions in restoration of mitochondrial network following heat stress. Biochim. Biophys. Acta 1763: 141-151.
5. Bösl, B., Grimminger, V. and Walter, S. 2006. The molecular chaperone HSP 104—a molecular machine for protein disaggregation. J. Struct. Biol. 156: 139-148.
6. Leidhold, C., von Janowsky, B., Becker, D., Bender, T. and Voos, W. 2006. Structure and function of HSP 78, the mitochondrial ClpB homolog. J. Struct. Biol. 156: 149-164.
7. Schuchman, E.H. 2007. The pathogenesis and treatment of acid sphingomyelinase-deficient Niemann-Pick disease. J. Inherit. Metab. Dis. 30: 654-663.
8. Bhuiyan, Z.A., Momenah, T.S., Amin, A.S., Al-Khadra, A.S., Alders, M., Wilde, A.A. and Mannens, M.M. 2008. An intronic mutation leading to incomplete skipping of exon-2 in KCNQ1 rescues hearing in Jervell and Lange-Nielsen syndrome. Prog. Biophys. Mol. Biol. 98: 319-327.
9. Desantis, M.E. and Shorter, J. 2011. The elusive middle domain of HSP 104 and ClpB: location and function. Biochim. Biophys. Acta 1823: 29-39.

CHROMOSOMAL LOCATION

Genetic locus: CLPB (human) mapping to 11q13.4.

PROTOCOLS

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

PRODUCT

HSP 78 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 78 shRNA Plasmid (h): sc-96339-SH and HSP 78 shRNA (h) Lentiviral Particles: sc-96339-V as alternate gene silencing products.

For independent verification of HSP 78 (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-96339A, sc-96339B and sc-96339C.

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 78 siRNA (h) is recommended for the inhibition of HSP 78 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor HSP 78 gene expression knockdown using RT-PCR Primer: HSP 78 (h)-PR: sc-96339-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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