SANTA CRUZ BIOTECHNOLOGY, INC.

HELB siRNA (h): sc-95729

BACKGROUND

HELB (helicase B), also known as hDHB (human DNA helicase B), is a 1,087 amino acid ATPase and 5'-3' DNA helicase. Due to a preference for ATP and dATP as substrates, HELB binds strongly to single-stranded DNA only in the absence of ATP. HELB has been shown to bind to RPA 70 kDa subunit and at least two subunits of the polymerase α-primase complex during DNA replication. Upon DNA damage, HELB is thought to be phosphorylated by either Atm or ATR. When a dominant-negative mutant of the HELB protein was injected into the nucleus of early G_1 phase cells, DNA synthesis was halted, suggesting that HELB is necessary for cell cycle progression. HELB is expressed highly in thymus and testis and is present at lower levels in kidney spleen, brain and liver.

REFERENCES

1. Seki, M., Kohda, T., Yano, T., Tada, S., Yanagisawa, J., Eki, T., Ui, M. and Enomoto, T. 1995. Characterization of DNA synthesis and DNA-dependent ATPase activity at a restrictive temperature in temperature-sensitive tsFT848 cells with thermolabile DNA helicase B. Mol. Cell. Biol. 15: 165-172.
2. Saitoh, A., Tada, S., Katada, T. and Enomoto, T. 1995. Stimulation of mouse DNA primase-catalyzed oligoribonucleotide synthesis by mouse DNA helicase B. Nucleic Acids Res. 23: 2014-2018.
3. Tada, S., Kobayashi, T., Omori, A., Kusa, Y., Okumura, N., Kodaira, H., Ishimi, Y., Seki, M. and Enomoto, T. 2001. Molecular cloning of a cDNA encoding mouse DNA helicase B, which has homology to *Escherichia coli* RecD protein, and identification of a mutation in the DNA helicase B from tsFT848 temperature-sensitive DNA replication mutant cells. Nucleic Acids Res. 29: 3835-3840.
4. Singleton, M.R. and Wigley, D.B. 2002. Modularity and specialization in superfamily 1 and 2 helicases. J. Bacteriol. 184: 1819-1826.
5. Taneja, P., Gu, J., Peng, R., Carrick, R., Uchiumi, F., Ott, R.D., Gustafson, E., Podust, V.N. and Fanning, E. 2002. A dominant-negative mutant of human DNA helicase B blocks the onset of chromosomal DNA replication. J. Biol. Chem. 277: 40853-40861.
6. Muzi-Falconi, M., Giannattasio, M., Foiani, M. and Plevani, P. 2003. The DNA polymerase α-primase complex: multiple functions and interactions. ScientificWorldJournal. 3: 21-33.
7. Matsuoka, S., Ballif, B.A., Smogorzewska, A., McDonald, E.R., Hurov, K.E., Luo, J., Bakalarski, C.E., Zhao, Z., Solimini, N., Lerenthal, Y., Shiloh, Y., Gygi, S.P. and Elledge, S.J. 2007. ATM and ATR substrate analysis reveals extensive protein networks responsive to DNA damage. Science 316: 1160-1166.

CHROMOSOMAL LOCATION

Genetic locus: HELB (human) mapping to 12q14.3.

PROTOCOLS

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

PRODUCT

HELB 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 HELB shRNA Plasmid (h): sc-95729-SH and HELB shRNA (h) Lentiviral Particles: sc-95729-V as alternate gene silencing products.

For independent verification of HELB (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-95729A, sc-95729B and sc-95729C.

SSTORAGE 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

HELB siRNA (h) is recommended for the inhibition of HELB 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 HELB gene expression knockdown using RT-PCR Primer: HELB (h)-PR: sc-95729-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.