SANTA CRUZ BIOTECHNOLOGY, INC.

DNASE1L3 siRNA (h): sc-77163

BACKGROUND

DNASE1L3 (deoxyribonuclease I-like 3), also known as LSD (liver and spleen DNase), DHP2, DNase γ, DNase Y or DNAS1L3, is a member of the DNase I family of Ca^{2+}/Mg^{2+}-dependent endonucleases. DNASE1L3 localizes to the nucleus and is expressed in liver, spleen, thymus, small intestine, kidney, bone marrow and lymph node. DNASE1L3 cleaves nuclear chromatin internucleosomally and is believed to play a role in DNA breakdown during apoptosis. DNASE1L3 cleaves single- and double-stranded DNA, producing 3'-OH/5'-P ends. The endonuclease activity of DNASE1L3 can be enhanced by association with α-actinin-4 and repressed by poly-ADP-ribosylation by PARP-1. PARP-1 activity can be inactivated in the execution phase of apoptosis by caspase-like proteases, thereby relieving the inhibition of DNASE1L3. DNASE1L3 may also be inhibited by zinc but, in contrast with DNase I, it is not inhibited by monomeric Actin.

REFERENCES

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2. Liu, Q.Y., et al. 2000. Apoptosis-related functional features of the DNase I-like family of nucleases. Ann. N.Y. Acad. Sci. 887: 60-76.
3. Boulares, A.H., et al. 2002. Regulation of DNAS1L3 endonuclease activity by poly(ADP-ribosyl)ation during etoposide-induced apoptosis. Role of poly(ADP-ribose) polymerase-1 cleavage in endonuclease activation. J. Biol. Chem. 277: 372-378.
4. Boulares, A.H., et al. 2002. The poly(ADP-ribose) polymerase-1-regulated endonuclease DNAS1L3 is required for etoposide-induced internucleosomal DNA fragmentation and increases etoposide cytotoxicity in transfected osteosarcoma cells. Cancer Res. 62: 4439-4444.
5. Liu, Q.Y., et al. 2004. Regulation of DNase Y activity by actinin-α4 during apoptosis. Cell Death Differ. 11: 645-654.
6. Boulares, A.H. and Ren, T. 2004. Mechanism of acetaminophen-induced apoptosis in cultured cells: roles of caspase-3, DNA fragmentation factor, and the Ca^{2+} and Mg^{2+} endonuclease DNAS1L3. Basic Clin. Pharmacol. Toxicol. 94: 19-29.

CHROMOSOMAL LOCATION

Genetic locus: DNASE1L3 (human) mapping to 3p14.3.

PRODUCT

DNASE1L3 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 DNASE1L3 shRNA Plasmid (h): sc-77163-SH and DNASE1L3 shRNA (h) Lentiviral Particles: sc-77163-V as alternate gene silencing products.

For independent verification of DNASE1L3 (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-77163A, sc-77163B and sc-77163C.

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

DNASE1L3 siRNA (h) is recommended for the inhibition of DNASE1L3 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 DNASE1L3 gene expression knockdown using RT-PCR Primer: DNASE1L3 (h)-PR: sc-77163-PR (20 µl, 532 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Li, N., et al. 2022. Deficient DNASE1L3 facilitates neutrophil extracellular traps-induced invasion via cyclic GMP-AMP synthase and the non-canonical NFκB pathway in diabetic hepatocellular carcinoma. Clin. Transl. Immunology 11: e1386.

RESEARCH USE

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

PROTOCOLS

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