SANTA CRUZ BIOTECHNOLOGY, INC.

LIV-1 siRNA (h): sc-75427

BACKGROUND

LIV-1 (estrogen-regulated protein), also known as ZIP6 (zinc transporter), Zrt- and Irt-like protein 6 or, in mouse and rat, SLC36A6 (solute carrier family 39 member 6), is expressed as two isoforms. LIV-1 is a multi-pass cell membrane protein that is 749 amino acids in length and is expressed abundantly in breast, prostate, placenta, kidney, pituitary and corpus callosum, as well as in cells derived from various types of cancers affecting the glands, cervix and lungs. LIV-1 is a member of the ZIP transporter protein family which consists of 14 members that transport zinc. LIV-1 transports zinc from its position on the plasma membrane into the cytosol of the cell and contains a histidine-rich transmembrane domain which is thought to bind zinc and aid in its transportation. LIV-1 is thought to be important for zinc uptake in neuroblastoma cells and may also be crucial for maintaining zinc homeostasis, a process which aids in the prevention of cancer and disease. Activated estrogen receptors are thought to regulate LIV-1 expression at the level of transcription, via the mRNA precursor to LIV-1 which associates with estrogen receptors that are activated by growth factors and estradiol. LIV-1 is upregulated in hormone-rich tissue, including breast and cervical cancer, where it is thought to affect cell motility and may play an important role in tumor development and metastasis. Conversely, less aggressive tumors may contain high levels of LIV-1 that could lead to apoptosis, indicating a dual role for LIV-1 in tumor suppression.

REFERENCES

1. El-Tanani, M.K. and Green, C.D. 1997. Interaction between estradiol and growth factors in the regulation of specific gene expression in MCF-7 human breast cancer cells. J. Steroid Biochem. Mol. Biol. 60: 269-276.
2. Taylor, K.M. 2000. LIV-1 breast cancer protein belongs to new family of histidine-rich membrane proteins with potential to control intracellular Zn^{2+} homeostasis. IUBMB Life 49: 249-253.
3. Taylor, K.M., et al. 2005. Structure-function analysis of a novel member of the LIV-1 subfamily of zinc transporters, ZIP14. FEBS Lett. 579: 427-432.
4. Kasper, G., et al. 2005. Expression levels of the putative zinc transporter LIV-1 are associated with a better outcome of breast cancer patients. Int. J. Cancer 117: 961-973.
5. Online Mendelian Inheritance in Man, OMIM™. 2005. Johns Hopkins University, Baltimore, MD. MIM Number: 608731. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
6. Kitamura, H., et al. 2006. Toll-like receptor-mediated regulation of zinc homeostasis influences dendritic cell function. Nat. Immunol. 7: 971-977.
7. Zhao, L., et al. 2007. LIV-1 suppression inhibits HeLa cell invasion by targeting ERK1/2-Snail/Slug pathway. Biochem. Biophys. Res. Commun. 363: 82-88.
8. Chowanadisai, W., et al. 2008. Zip6 (LIV-1) regulates zinc uptake in neuroblastoma cells under resting but not depolarizing conditions. Brain Res. 1199: 10-19.

PROTOCOLS

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

CHROMOSOMAL LOCATION

Genetic locus: SLC39A6 (human) mapping to 18q12.2.

PRODUCT

LIV-1 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 LIV-1 shRNA Plasmid (h): sc-75427-SH and LIV-1 shRNA (h) Lentiviral Particles: sc-75427-V as alternate gene silencing products.

For independent verification of LIV-1 (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-75427A, sc-75427B and sc-75427C.

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

LIV-1 siRNA (h) is recommended for the inhibition of LIV-1 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 LIV-1 gene expression knockdown using RT-PCR Primer: LIV-1 (h)-PR: sc-75427-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.