SANTA CRUZ BIOTECHNOLOGY, INC.

ACSVL3 siRNA (h): sc-78881

BACKGROUND

Acyl-coenzyme A synthetases (ACSs) are a large family of related enzymes known to catalyze the fundamental initial reaction in fatty acid metabolism. The ACS family is roughly characterized based on fatty acid chain length preference amongst different members. The nomenclature in the ACS family reflects this relationship and includes short-chain ACS (ACSS), medium-chain ACS (ACSM), long-chain ACS (ACSL) and very long-chain ACS (ACSVL). ACSVL family members are capable of activating both long (LCFAs) and very long-chain fatty acids (VLCFAs). There are six members of the human ACSVL subfamily, which have been described as solute carrier family 27A (SLC27A) gene products. They represent a group of evolutionarily conserved fatty acid transport proteins (FATPs) recognized for their role in facilitating translocation of long-chain fatty acids across the plasma membrane. The family nomenclature has recently been unified with their respective acyl-CoA synthetase family designations: ACSVL1 (FATP2), ACSVL2 (FATP6), ACSVL3 (FATP3), ACSVL4 (FATP1), ACSVL5 (FATP4) and ACSVL6 (FATP5). ACSVLs have unique expression patterns and are found in major organs of fatty acid metabolism, such as adipose tissue, liver, heart and kidney. ACSVL3 is a 730 amino acid multi-pass membrane protein. Encoded by a gene that maps to human chromosome 1q21.3, ACSVL3 exists as three alternatively spliced isoforms.

REFERENCES

1. Schaffer, J.E. and Lodish, H.F. 1994. Expression cloning and characterization of a novel adipocyte long chain fatty acid transport protein. Cell 79: 427-436.
2. Hirsch, D., et al. 1998. A family of fatty acid transporters conserved from mycobacterium to man. Proc. Natl. Acad. Sci. USA 95: 8625-8629.
3. Abumrad, N., et al. 1999. Membrane proteins implicated in long-chain fatty acid uptake by mammalian cells: CD36, FATP and FABPμ. Biochim. Biophys. Acta 1441: 4-13.
4. Binnert, C., et al. 2000. Fatty acid transport protein-1 mRNA expression in skeletal muscle and in adipose tissue in humans. Am. J. Physiol. Endocrinol. Metab. 279: E1072-E1079.
5. Martin, G., et al. 2000. The human fatty acid transport protein-1 (SLC27A1; FATP-1) cDNA and gene: organization, chromosomal localization, and expression. Genomics 66: 296-304.
6. Martin, G., et al. 2000. Induction of the fatty acid transport protein 1 and acyl-CoA synthase genes by dimer-selective rexinoids suggests that the peroxisome proliferator-activated receptor-retinoid X receptor heterodimer is their molecular target. J. Biol. Chem. 275: 12612-12618.
7. Watkins, P.A., et al. 2007. Evidence for 26 distinct acyl-coenzyme A synthetase genes in the human genome. J. Lipid Res. 48: 2736-2750.

CHROMOSOMAL LOCATION

Genetic locus: SLC27A3 (human) mapping to 1q21.3.

PROTOCOLS

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

PRODUCT

ACSVL3 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 ACSVL3 shRNA Plasmid (h): sc-78881-SH and ACSVL3 shRNA (h) Lentiviral Particles: sc-78881-V as alternate gene silencing products.

For independent verification of ACSVL3 (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-78881A, sc-78881B and sc-78881C.

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

ACSVL3 siRNA (h) is recommended for the inhibition of ACSVL3 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 ACSVL3 gene expression knockdown using RT-PCR Primer: ACSVL3 (h)-PR: sc-78881-PR (20 µl, 593 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Bae, H., et al. 2020. Angiopoietin-2-integrin α5β1 signaling enhances vascular fatty acid transport and prevents ectopic lipid-induced Insulin resistance. Nat. Commun. 11: 2980.

RESEARCH USE

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