

SFXN1 siRNA (h): sc-91814

BACKGROUND

The sideroflexin (SFXN) family is comprised of SFXN1, SFXN2, SFXN3, SFXN4 and SFXN5. SFXN1, also designated tricarboxylate carrier protein TCC, is the most highly characterized family member. The ubiquitously expressed SFXN1 protein resides as an integral protein of the mitochondrial inner membrane. It functions as an essential component of the shuttle system that transports mitochondrial acetyl-CoA into the cytosol, where lipogenesis occurs. The SFXN1 gene is mutated in flexed-tail (f/f) mice, which display axial skeletal abnormalities and a transient embryonic and neonatal anemia characterized by pathologic intramitochondrial iron deposits in erythrocytes. Therefore, SFXN1 is also thought to facilitate the transport of a component required for iron utilization into mitochondria. All SFXN family members show expression in pancreatic islet cells. SFXN5 displays a citrate transport activity and is primarily expressed in brain.

REFERENCES

1. Fleming, M.D., et al. 2001. A mutation in a mitochondrial transmembrane protein is responsible for the pleiotropic hematological and skeletal phenotype of flexed-tail (f/f) mice. *Genes Dev.* 15: 652-657.
2. Miyake, S., et al. 2002. Identification and characterization of a novel mitochondrial tricarboxylate carrier. *Biochem. Biophys. Res. Commun.* 295: 463-468.
3. Miyake, S., et al. 2002. Expression of mitochondrial tricarboxylate carrier TCC mRNA and protein in the rat brain. *Brain Res. Mol. Brain Res.* 100: 67-73.
4. Lockhart, P.J., et al. 2002. The human sideroflexin 5 (SFXN5) gene: sequence, expression analysis and exclusion as a candidate for PARK3. *Gene* 285: 229-237.
5. Zheng, H., et al. 2003. Molecular cloning and characterization of a novel human putative transmembrane protein homologous to mouse sideroflexin associated with sideroblastic anemia. *DNA Seq.* 14: 369-373.
6. Siculella, L., et al. 2004. n-6 PUFAs downregulate expression of the tricarboxylate carrier in rat liver by transcriptional and posttranscriptional mechanisms. *J. Lipid Res.* 45: 1333-1340.

CHROMOSOMAL LOCATION

Genetic locus: SFXN1 (human) mapping to 5q35.2.

PRODUCT

SFXN1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see SFXN1 shRNA Plasmid (h): sc-91814-SH and SFXN1 shRNA (h) Lentiviral Particles: sc-91814-V as alternate gene silencing products.

For independent verification of SFXN1 (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-91814A, sc-91814B and sc-91814C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

SFXN1 siRNA (h) is recommended for the inhibition of SFXN1 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 μ M in 66 μ l. 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 SFXN1 gene expression knockdown using RT-PCR Primer: SFXN1 (h)-PR: sc-91814-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Tifoun, N., et al. 2021. Insights into the roles of the sideroflexins/SLC56 family in iron homeostasis and iron-sulfur biogenesis. *Biomedicines* 9: 103.
2. Tifoun, N., et al. 2022. A high-throughput search for SFXN1 physical partners led to the identification of ATAD3, HSD10 and TIM50. *Biology* 11: 1298.

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.