SANTA CRUZ BIOTECHNOLOGY, INC.

TXNDC1 siRNA (h): sc-92249

BACKGROUND

Thioredoxins comprise a family of small proteins that, by catalyzing the oxidation of disulfide bonds, participate in redox reactions throughout the cell. Proteins that contain thioredoxin domains do not necessarily convey the oxidative properties of thioredoxins, but generally function as disulfide isomerases that enzymatically rearrange disulfide bonds found in various proteins. TXNDC1 (thioredoxin-related transmembrane protein 1), also known as MX, TXNDC, PDIA11, TXNDC1 or TMX1, is a 280 amino acid ubiquitously expressed single-pass type I membrane protein that localizes to the endoplasmic reticulum (ER). With highest expression in kidney, liver, placenta and lung, TXNDC1 may participate in regulating ER stress caused by BFA (brefeldin A), an inhibitor of ER-Golgi transport. TXNDC1 is suggested to modulate various molecules with its oxidoreductase activity and regulate redox reactions in the ER.

REFERENCES

1. Holmgren, A. 1985. Thioredoxin. Annu. Rev. Biochem. 54: 237-271.
2. Holmgren, A. 1989. Thioredoxin and glutaredoxin systems. J. Biol. Chem. 264: 13963-13966.
3. Eklund, H., et al. 1991. Structural and functional relations among thioredoxins of different species. Proteins 11: 13-28.
4. Matsuo, Y., et al. 2001. Identification of a novel thioredoxin-related transmembrane protein. J. Biol. Chem. 276: 10032-10038.
5. Anelli, T., et al. 2002. ERp44, a novel endoplasmic reticulum folding assistant of the thioredoxin family. EMBO J. 21: 835-844.
6. Anelli, T., et al. 2003. Thiol-mediated protein retention in the endoplasmic reticulum: the role of ERp44. EMBO J. 22: 5015-5022.
7. Matsuo, Y., et al. 2004. TMX, a human transmembrane oxidoreductase of the thioredoxin family: the possible role in disulfide-linked protein folding in the endoplasmic reticulum. Arch. Biochem. Biophys. 423: 81-87.
8. Breuza, L., et al. 2004. Proteomics of endoplasmic reticulum-Golgi intermediate compartment (ERGIC) membranes from brefeldin A-treated Hep G2 cells identifies ERGIC-32, a new cycling protein that interacts with human Erv46. J. Biol. Chem. 279: 47242-47253.

CHROMOSOMAL LOCATION

Genetic locus: TMX1 (human) mapping to 14q22.1.

PRODUCT

TXNDC1 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 TXNDC1 shRNA Plasmid (h): sc-92249-SH and TXNDC1 shRNA (h) Lentiviral Particles: sc-92249-V as alternate gene silencing products.

For independent verification of TXNDC1 (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-92249A, sc-92249B and sc-92249C.

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

TXNDC1 siRNA (h) is recommended for the inhibition of TXNDC1 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 TXNDC1 gene expression knockdown using RT-PCR Primer: TXNDC1 (h)-PR: sc-92249-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.

PROTOCOLS

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