

THEM2 siRNA (h): sc-95646

BACKGROUND

Esterases comprise a superfamily of hydrolase enzymes that use water to catalyze the dissociation of an ester into an acid and an alcohol. The thioesterases, a subfamily of esterase proteins, exhibit thiol-specific esterase activity. THEM2 (thioesterase superfamily member 2), also known as HT012 or PNAS-27, is a 140 amino acid proteins that belongs to the thioesterase subfamily of esterase enzymes. Highly expressed in kidney with moderate expression in brain, liver and intestines, THEM2 contains a hotdog-fold and is thought to co-localize with microtubules, possibly playing a role in cellular proliferation events. The gene encoding THEM2 maps to chromosome 6, which contains 170 million base pairs and comprises nearly 6% of the human genome. Deletion of a portion of the q arm of chromosome 6 is associated with early onset intestinal cancer, suggesting the presence of a cancer susceptibility locus. Additionally, porphyria cutanea tarda, Parkinson's disease, Stickler syndrome and a susceptibility to bipolar disorder are all associated with genes that map to chromosome 6.

REFERENCES

1. Mungall, A.J., Palmer, S.A., Sims, S.K., Edwards, C.A., Ashurst, J.L., Wilming, L., Jones, M.C., Horton, R., Hunt, S.E., Scott, C.E., Gilbert, J.G.R., Clamp, M.E., Bethel, G., Milne, S., Ainscough, R., Almeida, J.P., et al. 2003. The DNA sequence and analysis of human chromosome 6. *Nature* 425: 805-811.
2. Lucas, B., Grigo, K., Erdmann, S., Lausen, J., Klein-Hitpass, L. and Ryffel, G.U. 2005. HNF4 α reduces proliferation of kidney cells and affects genes deregulated in renal cell carcinoma. *Oncogene* 24: 6418-6431.
3. Cheng, Z., Song, F., Shan, X., Wei, Z., Wang, Y., Dunaway-Mariano, D. and Gong, W. 2006. Crystal structure of human thioesterase superfamily member 2. *Biochem. Biophys. Res. Commun.* 349: 172-177.
4. Cheng, Z., Bao, S., Shan, X., Xu, H. and Gong, W. 2006. Human thioesterase superfamily member 2 (hTHEM2) is co-localized with β -tubulin onto the microtubule. *Biochem. Biophys. Res. Commun.* 350: 850-853.
5. Kanno, K., Wu, M.K., Agate, D.S., Fanelli, B.J., Wagle, N., Scapa, E.F., Ukomadu, C. and Cohen, D.E. 2007. Interacting proteins dictate function of the minimal START domain phosphatidylcholine transfer protein/StarD2. *J. Biol. Chem.* 282: 30728-30736.
6. Grigo, K., Wirsing, A., Lucas, B., Klein-Hitpass, L. and Ryffel, G.U. 2008. HNF4 α orchestrates a set of 14 genes to down-regulate cell proliferation in kidney cells. *Biol. Chem.* 389: 179-187.

CHROMOSOMAL LOCATION

Genetic locus: ACOT13 (human) mapping to 6p22.3.

PRODUCT

THEM2 siRNA (h) is a target-specific 19-25 nt siRNA 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 THEM2 shRNA Plasmid (h): sc-95646-SH and THEM2 shRNA (h) Lentiviral Particles: sc-95646-V as alternate gene silencing products.

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

THEM2 siRNA (h) is recommended for the inhibition of THEM2 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.

GENE EXPRESSION MONITORING

THEM2 (B-12): sc-373696 is recommended as a control antibody for monitoring of THEM2 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor THEM2 gene expression knockdown using RT-PCR Primer: THEM2 (h)-PR: sc-95646-PR (20 μ l). 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.