SANTA CRUZ BIOTECHNOLOGY, INC.

Peroxin 12 siRNA (h): sc-93719

BACKGROUND

Peroxisomes are single-membrane bound organelles present in virtually all eukaryotic cells. They are involved in numerous catabolic and anabolic pathways, including β-oxidation of very long chain fatty acids, metabolism of hydrogen peroxide, plasmalogen biosynthesis and bile acid synthesis. The Peroxin family, which includes more than 20 members, is required for peroxisome biogenesis. Peroxin 12, also known as PEX12 (peroxisomal biogenesis factor 12) or PAF-3 (peroxisome assembly factor 3), is a 359 amino acid multipass membrane protein that localizes to peroxisome membranes and belongs to the pex2/pex10/pex12 family. Peroxin 12 interacts with Peroxin 5, Peroxin 10 and Peroxin 19, and is required for protein import into peroxisomes. Defects in the gene encoding Peroxin 12 are the cause of peroxisome biogenesis disorder complementation group 3 (PBD-CG3) and Zellweger syndrome, both of which arise from a failure of peroxisomal protein import.

REFERENCES

1. Chang, C.C., Lee, W.H., Moser, H., Valle, D. and Gould, S.J. 1997. Isolation of the human PEX12 gene, mutated in group 3 of the peroxisome biogenesis disorders. Nat. Genet. 15: 385-388.
2. Okumoto, K., Shimozawa, N., Kawai, A., Tamura, S., Tsukamoto, T., Osumi, T., Moser, H., Wanders, R.J., Suzuki, Y., Kondo, N. and Fujiki, Y. 1998. PEX12, the pathogenic gene of group III Zellweger syndrome: cDNA cloning by functional complementation on a CHO cell mutant, patient analysis, and characterization of PEX12p. Mol. Cell. Biol. 18: 4324-4336.
3. Chang, C.C., Warren, D.S., Sacksteder, K.A. and Gould, S.J. 1999. PEX12 interacts with PEX5 and PEX10 and acts downstream of receptor docking in peroxisomal matrix protein import. J. Cell Biol. 147: 761-774.
4. Sacksteder, K.A., Jones, J.M., South, S.T., Li, X., Liu, Y. and Gould, S.J. 2000. PEX19 binds multiple peroxisomal membrane proteins, is predominantly cytoplasmic, and is required for peroxisome membrane synthesis. J. Cell Biol. 148: 931-944.
5. Fransen, M., Wylin, T., Brees, C., Mannaerts, G.P. and Van Veldhoven, P.P. 2001. Human pex19p binds peroxisomal integral membrane proteins at regions distinct from their sorting sequences. Mol. Cell. Biol. 21: 4413-4424.
6. Fan, J., Quan, S., Orth, T., Awai, C., Chory, J. and Hu, J. 2005. The *Arabidopsis* PEX12 gene is required for peroxisome biogenesis and is essential for development. Plant Physiol. 139: 231-239.
7. Krazy, H. and Michels, P.A. 2006. Identification and characterization of three peroxins—PEX6, PEX10 and PEX12—involved in glycosome biogenesis in *Trypanosoma brucei*. Biochim. Biophys. Acta 1763: 6-17.
8. Krause, C., Rosewich, H., Thanos, M. and Gärtner, J. 2006. Identification of novel mutations in PEX2, PEX6, PEX10, PEX12, and PEX13 in Zellweger spectrum patients. Hum. Mutat. 27: 1157.

CHROMOSOMAL LOCATION

Genetic locus: PEX12 (human) mapping to 17q12.

RESEARCH USE

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

PRODUCT

Peroxin 12 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 Peroxin 12 shRNA Plasmid (h): sc-93719-SH and Peroxin 12 shRNA (h) Lentiviral Particles: sc-93719-V as alternate gene silencing products.

For independent verification of Peroxin 12 (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-93719A, sc-93719B and sc-93719C.

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

Peroxin 12 siRNA (h) is recommended for the inhibition of Peroxin 12 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 Peroxin 12 gene expression knockdown using RT-PCR Primer: Peroxin 12 (h)-PR: sc-93719-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Jin, H., Komita, M., Koseki, H. and Aoe, T. 2017. Sublethal endoplasmic reticulum stress caused by the mutation of immunoglobulin heavy chain-binding protein induces the synthesis of a mitochondrial protein, pyrroline-5-carboxylate reductase 1. Cell Stress Chaperones 22: 77-85.

PROTOCOLS

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