SANTA CRUZ BIOTECHNOLOGY, INC.

COX10 siRNA (m): sc-72304

BACKGROUND

Cytochrome c oxidase (COX) localizes to the mitochondrial inner membrane and is the terminal enzyme in the electron transfer chain, functioning as a transmembrane proton pump that builds an electrochemical gradient with chemical energy from the reduction of O_2. The COX subunit 10 or COX10 (also known as heme A: farnesyltransferase or Heme O synthase) is a multi-pass transmembrane protein encoded by a nuclear gene. COX10 was originally identified in yeast and its structure is conserved from *E. coli* to human. COX10 is responsible for catalyzing the first step in the biosynthesis of heme A: the conversion of protoheme (heme B) to heme O by the addition of a farnesyl group. As a result, COX10 is necessary for the expression of a functional COX. A mutation in the gene encoding COX10 may result in COX deficiency in humans.

REFERENCES

1. Glerum, D.M., et al. 1994. Isolation of a human cDNA for heme A:farnesyltransferase by functional complementation of a yeast cox10 mutant. Proc. Natl. Acad. Sci. USA 91: 8452-8456.
2. Murakami, T., et al. 1997. Genomic structure and expression of the human heme A:farnesyltransferase (COX10) gene. Genomics 42: 161-164.
3. Valnot, I., et al. 2000. A mutation in the human heme A:farnesyltransferase gene (COX10) causes cytochrome c oxidase deficiency. Hum. Mol. Genet. 9: 1245-1249.
4. Antonicka, H., et al. 2003. Mutations in COX10 result in a defect in mitochondrial heme A biosynthesis and account for multiple, early-onset clinical phenotypes associated with isolated COX deficiency. Hum. Mol. Genet. 12: 2693-2702.
5. Coenen, M.J., et al. 2004. Cytochrome c oxidase biogenesis in a patient with a mutation in COX10 gene. Ann. Neurol. 56: 560-564.
6. Diaz, F., et al. 2005. Mice lacking COX10 in skeletal muscle recapitulate the phenotype of progressive mitochondrial myopathies associated with cytochrome c oxidase deficiency. Hum. Mol. Genet. 14: 2737-2748.
7. Diaz, F., et al. 2006. Cytochrome c oxidase is required for the assembly/stability of respiratory complex I in mouse fibroblasts. Mol. Cell. Biol. 26: 4872-4881.

CHROMOSOMAL LOCATION

Genetic locus: Cox10 (mouse) mapping to 11 B3.

PRODUCT

COX10 siRNA (m) 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 COX10 shRNA Plasmid (m): sc-72304-SH and COX10 shRNA (m) Lentiviral Particles: sc-72304-V as alternate gene silencing products.

For independent verification of COX10 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-72304A, sc-72304B and sc-72304C.

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

COX10 siRNA (m) is recommended for the inhibition of COX10 expression in mouse 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 COX10 gene expression knockdown using RT-PCR Primer: COX10 (m)-PR: sc-72304-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.