



# COX4I2 siRNA (h): sc-72981

## BACKGROUND

The cytochrome c oxidase (COX) family of proteins function as the final electron donor in the respiratory chain to drive a proton gradient across the inner mitochondrial membrane, ultimately resulting in the production of water. The mammalian COX apoenzyme is a dimer, with each monomer consisting of 13 subunits, some of which are mitochondrial and some of which are nuclear. Cytochrome c oxidase IV (COX4) is a nuclear-encoded subunit of COX that may play a role in regulating COX activity. COX4 is expressed ubiquitously in adult human tissue with the strongest levels of expression in the pancreas and moderate expression levels in heart, skeletal muscle and placenta. Two isoforms exist for COX4, namely COX4I1 and COX4I2, and they are encoded by two different genes. COX4I2 (cytochrome c oxidase subunit 4 isoform 2), also known as COX4B, COX4-2, COX4L2 or COXIV-2, is the less common isoform and is incorporated into the COX apoenzyme under hypoxic conditions to optimize COX activity.

## REFERENCES

1. Zeviani, M., et al. 1987. Isolation of a cDNA clone encoding subunit IV of human cytochrome c oxidase. *Gene* 55: 205-217.
2. Lomax, M.L., et al. 1992. Rapid evolution of the human gene for cytochrome c oxidase subunit IV. *Proc. Natl. Acad. Sci. USA* 89: 5266-5270.
3. Makris, G.J., et al. 1997. The gene encoding subunit IV of cytochrome c oxidase maps to mouse chromosome 8. *Mamm. Genome* 7: 789-790.
4. Bachman, N.J., et al. 1999. The 5' region of the COX4 gene contains a novel overlapping gene, NOC4. *Mamm. Genome* 10: 506-512.
5. Hüttemann, M., et al. 2001. Mammalian subunit IV isoforms of cytochrome c oxidase. *Gene* 267: 111-123.
6. Vizirianakis, I.S., et al. 2002. Differentiation-dependent repression of c-myc, B22, COX II and COX IV genes in murine erythroleukemia (MEL) cells. *Biochem. Pharmacol.* 63: 1009-1017.
7. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 123864. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>

## CHROMOSOMAL LOCATION

Genetic locus: COX4I2 (human) mapping to 20q11.21.

## PRODUCT

COX4I2 siRNA (h) is a pool of 2 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see COX4I2 shRNA Plasmid (h): sc-72981-SH and COX4I2 shRNA (h) Lentiviral Particles: sc-72981-V as alternate gene silencing products.

For independent verification of COX4I2 (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-72981A and sc-72981B.

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

## APPLICATIONS

COX4I2 siRNA (h) is recommended for the inhibition of COX4I2 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  $\mu$ M in 66  $\mu$ 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

COX4I2 (RR3): sc-100522 is recommended as a control antibody for monitoring of COX4I2 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 $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  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 $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  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 COX4I2 gene expression knockdown using RT-PCR Primer: COX4I2 (h)-PR: sc-72981-PR (20  $\mu$ 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](http://www.scbt.com) for detailed protocols and support products.