

# CAT siRNA (m): sc-41468

## BACKGROUND

Aging affects oxidative metabolism in liver and other tissues. Carnitine acyltransferases are key enzymes of this process in mitochondria. Carnitine acetyltransferase (CAT, CRAT) catalyzes the reversible conversion of acetyl-CoA and carnitine to acetylcarnitine and CoA. The essential functions of CAT are to regenerate CoA, which allows peroxisomal  $\beta$ -oxidation to proceed, and to facilitate transport of acetyl moieties to mitochondria for oxidation. More than 70% of CAT is located in the mitochondrial matrix and it is also located in the endoplasmic reticulum, peroxisomal and mitochondrial inner membrane. An age associated decrease in CAT activity has been reported in many rat systems. The human gene encoding CAT maps to chromosome 9q34.1 and encodes a protein that contains a peroxisomal targeting signal and is expressed mostly in skeletal muscle, and less in heart, liver and pancreas. Total CAT activity is induced by acetate and fatty acids, and repressed by glucose.

## REFERENCES

1. Corti, O., Finocchiaro, G., Rossi, E., Zuffardi, O. and DiDonato, S. 1994. Molecular cloning of cDNAs encoding human carnitine acetyltransferase and mapping of the corresponding gene to chromosome 9q34.1. *Genomics* 23: 94-99.
2. Stemple, C.J., Davis, M.A. and Hynes, M.J. 1998. The facC gene of *Aspergillus nidulans* encodes an acetate-inducible carnitine acetyltransferase. *J. Bacteriol.* 180: 6242-6251.
3. Masterson, C. and Wood, C. 2000. Pea chloroplast carnitine acetyltransferase. *Proc. Biol. Sci.* 267: 1-6.
4. Liu, J., Killilea, D.W. and Ames, B.N. 2002. Age-associated mitochondrial oxidative decay: improvement of carnitine acetyltransferase substrate-binding affinity and activity in brain by feeding old rats acetyl-L-carnitine and/or R- $\alpha$ -lipoic acid. *Proc. Natl. Acad. Sci. USA* 99: 1876-1881.
5. SWISS-PROT/TrEMBL (P43155). World Wide Web URL: <http://www.expasy.ch/sprot/sprot-top.html>

## CHROMOSOMAL LOCATION

Genetic locus: Crat (mouse) mapping to 2 B.

## PRODUCT

CAT 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see CAT shRNA Plasmid (m): sc-41468-SH and CAT shRNA (m) Lentiviral Particles: sc-41468-V as alternate gene silencing products.

For independent verification of CAT (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-41468A, sc-41468B and sc-41468C.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support 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  $\mu$ 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

CAT siRNA (m) is recommended for the inhibition of CAT 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  $\mu$ 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

CAT (654D2Y): sc-517650 is recommended as a control antibody for monitoring of CAT 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).

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CAT gene expression knockdown using RT-PCR Primer: CAT (m)-PR: sc-41468-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.