

# GCAT siRNA (m): sc-145356

## BACKGROUND

GCAT (glycine C-acetyltransferase) is also known as KBL, aminoacetone synthase or 2-amino-3-ketobutyrate coenzyme A ligase and is a 419 amino acid protein. GCAT is localized to mitochondria in various tissues, including heart, brain, liver, pancreas and lungs. In mitochondria, two enzymes function in catalyzing the reaction that converts L-threonine into glycine, the second of which is GCAT. L-threonine is first converted into 2-amino-3-ketobutyrate by TDH, a reaction that is preceded by the CoA- and GCAT-dependent formation of glycine and acetyl-CoA. Defects in the gene encoding GCAT may result in elevated levels of aminoacetone and carbon dioxide, both of which are products of the 2-amino-3-ketobutyrate intermediate and can further breakdown to form methylglyoxal, hydrogen peroxide and ammonia. Excess blood levels of methylglyoxal may cause kidney damage and are thought to be associated with diabetic complications.

## REFERENCES

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## CHROMOSOMAL LOCATION

Genetic locus: Gcat (mouse) mapping to 15 E1.

## PRODUCT

GCAT 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 GCAT shRNA Plasmid (m): sc-145356-SH and GCAT shRNA (m) Lentiviral Particles: sc-145356-V as alternate gene silencing products.

For independent verification of GCAT (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-145356A, sc-145356B and sc-145356C.

## 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

GCAT siRNA (m) is recommended for the inhibition of GCAT 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.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor GCAT gene expression knockdown using RT-PCR Primer: GCAT (m)-PR: sc-145356-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.