

ACADS siRNA (m): sc-140792

BACKGROUND

ACADS (acyl-Coenzyme A dehydrogenase, C-2 to C-3 short chain), also known as SCAD or ACAD3, is a 412 amino acid homotetrameric mitochondrial flavo-protein that belongs to the acyl-CoA dehydrogenase family. ACADS catalyzes the rate-limiting step of the mitochondrial fatty acid β -oxidation pathway. Mutations of ACADS have been associated with fatty acid oxidation defects and metabolic diseases such as short-chain acyl-CoA dehydrogenase deficiency (SCAD deficiency), an autosomal recessive disorder resulting in acute acidosis and muscle weakness in infants and lipid-storage myopathy in adults. SCADS leads to the accumulation of butyrylcarnitine and ethylmalonic acid in blood and urine. ACADS contains four FAD domains.

REFERENCES

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2. Tafti, M., et al. 2003. Deficiency in short-chain fatty acid β -oxidation affects theta oscillations during sleep. *Nat. Genet.* 34: 320-325.
3. Nasser, I., et al. 2004. Thermal unfolding of medium-chain acyl-CoA dehydrogenase and iso(3)valeryl-CoA dehydrogenase: study of the effect of genetic defects on enzyme stability. *Biochim. Biophys. Acta* 1690: 22-32.
4. Ensenauer, R., et al. 2005. Human acyl-CoA dehydrogenase-9 plays a novel role in the mitochondrial β -oxidation of unsaturated fatty acids. *J. Biol. Chem.* 280: 32309-32316.
5. Nagpal, A., et al. 2006. Crystal structures of nitroalkane oxidase: insights into the reaction mechanism from a covalent complex of the flavoenzyme trapped during turnover. *Biochemistry* 45: 1138-1150.
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7. McAndrew, R.P., et al. 2008. Structural basis for substrate fatty acyl chain specificity: crystal structure of human very-long-chain acyl-CoA dehydrogenase. *J. Biol. Chem.* 283: 9435-9443.
8. Tein, I., et al. 2008. Short-chain acyl-CoA dehydrogenase gene mutation (c.319C>T) presents with clinical heterogeneity and is candidate founder mutation in individuals of Ashkenazi Jewish origin. *Mol. Genet. Metab.* 93: 179-189.

CHROMOSOMAL LOCATION

Genetic locus: Acads (mouse) mapping to 5 F.

PRODUCT

ACADS siRNA (m) is a target-specific 19-25 nt siRNA designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see ACADS shRNA Plasmid (m): sc-140792-SH and ACADS shRNA (m) Lentiviral Particles: sc-140792-V as alternate gene silencing 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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

ACADS siRNA (m) is recommended for the inhibition of ACADS 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 μ M in 66 μ 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

ACADS (G-10): sc-365953 is recommended as a control antibody for monitoring of ACADS 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 κ BP-HRP: sc-516102 or m-IgG κ 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 κ BP-FITC: sc-516140 or m-IgG κ 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 ACADS gene expression knockdown using RT-PCR Primer: ACADS (m)-PR: sc-140792-PR (20 μ 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 for detailed protocols and support products.