



TK2 siRNA (m): sc-154287

BACKGROUND

Thymidine kinase 2 (TK2) salvages mitochondrial (mt) pyrimidine deoxynucleosides for mtDNA precursor synthesis. TK2 phosphorylates these nucleosides to their corresponding nucleoside monophosphates using a nucleotide triphosphate as a donor. Deficiency of mitochondrial TK2 manifests as severe skeletal myopathy during infancy, due to depletion of mtDNA. Mutant enzyme possesses similar K_m values to wildtype, however, the V_{max} is markedly decreased, leading to the decreased enzyme efficiency, which causes the disease.

REFERENCES

1. Wang, L., Saada, A. and Eriksson, S. 2003. Kinetic properties of mutant thymidine kinase 2 suggest a mechanism for mitochondrial DNA depletion myopathy. *J. Biol. Chem.* 278: 6963-6968.
2. Barroso, J.F., Elholm, M. and Flatmark, T. 2003. Tight binding of deoxyribonucleotide triphosphates to human thymidine kinase 2 expressed in *Escherichia coli*. Purification and partial characterization of its dimeric and tetrameric forms. *Biochemistry* 42: 15158-15169.
3. Saada, A., Ben-Shalom, E., Zyslin, R., Miller, C., Mandel, H. and Elpeleg, O. 2003. Mitochondrial deoxyribonucleoside triphosphate pools in thymidine kinase 2 deficiency. *Biochem. Biophys. Res. Commun.* 310: 963-966.

CHROMOSOMAL LOCATION

Genetic locus: Tk2 (mouse) mapping to 8 D3.

PRODUCT

TK2 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 TK2 shRNA Plasmid (m): sc-154287-SH and TK2 shRNA (m) Lentiviral Particles: sc-154287-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.

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.

APPLICATIONS

TK2 siRNA (m) is recommended for the inhibition of TK2 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor TK2 gene expression knockdown using RT-PCR Primer: TK2 (m)-PR: sc-154287-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.