

# TNNI3K siRNA (h): sc-78851

## BACKGROUND

TNNI3K (TNNI3-interacting kinase), also known as CARK (cardiac ankyrin repeat kinase), is a 936 amino acid serine/threonine-protein kinase that is highly expressed in heart. Overexpression of TNNI3K leads to improved cardiac function by enhancing beating frequency and increasing contractile force and epinephrine response. TNNI3K suppresses phosphorylation of cardiac Troponin I and p38/JNK-mediated apoptosis, therefore protecting the myocardium from ischemic injury. Administration of TNNI3K to mice with myocardial infarction improves cardiac performance and attenuates ventricular remodeling, suggesting that TNNI3K could be a promising target in the treatment of cardiac diseases. There are four isoforms of TNNI3K that are produced as a result of alternative splicing events.

## REFERENCES

1. Luft, F.C. 2003. Hearts of this ILK rely on TNNI3K, a MAPKKK that regulated TNNI3. *J. Mol. Med.* 81: 279-280.
2. Zhao, Y., et al. 2003. Cloning and characterization of a novel cardiac-specific kinase that interacts specifically with cardiac Troponin I. *J. Mol. Med.* 81: 297-304.
3. Feng, Y., et al. 2007. AOP-1 interacts with cardiac-specific protein kinase TNNI3K and downregulates its kinase activity. *Biochemistry* 72: 1199-1204.
4. Lai, Z.F., et al. 2008. Overexpression of TNNI3K, a cardiac-specific MAP kinase, promotes P19CL6-derived cardiac myogenesis and prevents myocardial infarction-induced injury. *Am. J. Physiol. Heart Circ. Physiol.* 295: H708-H716.
5. Kaski, J.P., et al. 2008. Idiopathic restrictive cardiomyopathy in children is caused by mutations in cardiac sarcomere protein genes. *Heart* 94: 1478-1484.
6. Wheeler, F.C., et al. 2009. TNNI3K modifies disease progression in murine models of cardiomyopathy. *PLoS Genet.* 5: e1000647.

## CHROMOSOMAL LOCATION

Genetic locus: TNNI3K (human) mapping to 1p31.1.

## PRODUCT

TNNI3K siRNA (h) 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 TNNI3K shRNA Plasmid (h): sc-78851-SH and TNNI3K shRNA (h) Lentiviral Particles: sc-78851-V as alternate gene silencing products.

For independent verification of TNNI3K (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-78851A, sc-78851B and sc-78851C.

## 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

TNNI3K siRNA (h) is recommended for the inhibition of TNNI3K 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

TNNI3K (H-7): sc-514417 is recommended as a control antibody for monitoring of TNNI3K 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 TNNI3K gene expression knockdown using RT-PCR Primer: TNNI3K (h)-PR: sc-78851-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.