

# CaMKIIN1 siRNA (h): sc-78843

## BACKGROUND

CaMKII is a ubiquitously expressed serine/threonine protein kinase that is activated by  $Ca^{2+}$  and calmodulin (CaM) and has been implicated in regulation of the cell cycle and transcription. CaMKIIN1 (calcium/calmodulin-dependent protein kinase II inhibitor 1), also known as PRO1489, is a 78 amino acid protein that localizes to the cell junction and the synapse. Functioning as a potent and specific inhibitor of CaMKII, CaMKIIN1 interacts with CaMKII $\beta$  and, via this interaction, plays an important role in cell cycle regulation and transcription control. The gene encoding CaMKIIN1 maps to human chromosome 1, which houses over 1,100 genes, including a chemokine receptor (CKR) gene cluster and a variety of human cancer-related gene loci.

## REFERENCES

1. Nairn, A.C., et al. 1994. Calcium/calmodulin-dependent protein kinases. *Semin. Cancer Biol.* 5: 295-303.
2. Chang, B.H., et al. 1998. Characterization of a calmodulin kinase II inhibitor protein in brain. *Proc. Natl. Acad. Sci. USA* 95: 10890-10895.
3. Zhang, J., et al. 2001. Molecular cloning and characterization of a novel calcium/calmodulin-dependent protein kinase II inhibitor from human dendritic cells. *Biochem. Biophys. Res. Commun.* 285: 229-234.
4. Chang, B.H., et al. 2001. Calcium/calmodulin-dependent protein kinase II inhibitor protein: localization of isoforms in rat brain. *Neuroscience* 102: 767-777.
5. Meng, F., et al. 2003. Autophosphorylated calcium/calmodulin-dependent protein kinase II  $\alpha$  (CaMKII  $\alpha$ ) reversibly targets to and phosphorylates N-methyl-D-aspartate receptor subunit 2B (NR2B) in cerebral ischemia and reperfusion in hippocampus of rats. *Brain Res.* 967: 161-169.
6. Shimazaki, A., et al. 2006. Calcium/calmodulin-dependent protein kinase II in human articular chondrocytes. *Biorheology* 43: 223-233.
7. Wang, C., et al. 2008. A novel endogenous human CaMKII inhibitory protein suppresses tumor growth by inducing cell cycle arrest via p27 stabilization. *J. Biol. Chem.* 283: 11565-11574.
8. Loweth, J.A., et al. 2008. Inhibition of CaMKII in the nucleus accumbens shell decreases enhanced amphetamine intake in sensitized rats. *Neurosci. Lett.* 444: 157-160.

## CHROMOSOMAL LOCATION

Genetic locus: CAMK2N1 (human) mapping to 1p36.12.

## PRODUCT

CaMKIIN1 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 CaMKIIN1 shRNA Plasmid (h): sc-78843-SH and CaMKIIN1 shRNA (h) Lentiviral Particles: sc-78843-V as alternate gene silencing products.

For independent verification of CaMKIIN1 (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-78843A, sc-78843B and sc-78843C.

## STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at  $-20^{\circ}$  C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at  $-20^{\circ}$  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

CaMKIIN1 siRNA (h) is recommended for the inhibition of CaMKIIN1 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.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor CaMKIIN1 gene expression knockdown using RT-PCR Primer: CaMKIIN1 (h)-PR: sc-78843-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60 $^{\circ}$  C and the extension temperature should be 68-72 $^{\circ}$  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.