SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKIβ siRNA (h): sc-91129

BACKGROUND

The Ca^{2+}/calmodulin-dependent protein kinases (CaMKs) comprise a structurally related subfamily of serine/threonine kinases. CaMKIβ (Ca^{2+}/calmodulin-dependent protein kinase type 1B), also known as PNCK (pregnancy upregulated non-ubiquitously expressed CaM kinase) or BSTK3, is a 343 amino acid protein that localizes to both the nucleus and the cytoplasm and contains one protein kinase domain. Existing as multiple alternatively spliced isoforms, CaMKIβ functions to catalyze the ATP-dependent phosphorylation of CaMKI, an event that activates CaMKI activity and may be important for Ca^{2+}-triggered signaling cascades within the cell. The gene encoding CaMKIβ maps to human chromosome X, which contains nearly 153 million base pairs and houses over 1,000 genes.

REFERENCES

1. Nairn, A.C. and Picciotto, M.R. 1994. Calcium/calmodulin-dependent protein kinases. Semin. Cancer Biol. 5: 295-303.
2. Gardner, H.P., et al. 2000. The CaM kinase, PNCK, is spatially and temporally regulated during murine mammary gland development and may identify an epithelial cell subtype involved in breast cancer. Cancer Res. 60: 5571-5577.
3. Gardner, H.P., et al. 2000. Cloning, characterization, and chromosomal localization of PNCK, a Ca^{2+}/calmodulin-dependent protein kinase. Genomics 63: 279-288.
4. Hook, S.S. and Means, A.R. 2001. Ca^{2+}/CaM-dependent kinases: from activation to function. Annu. Rev. Pharmacol. Toxicol. 41: 471-505.
5. Uboha, N.V., et al. 2007. A calcium- and calmodulin-dependent kinase Iα/microtubule affinity regulating kinase 2 signaling cascade mediates calcium-dependent neurite outgrowth. J. Neurosci. 27: 4413-4423.
6. Takemoto-Kimura, S., et al. 2007. Regulation of dendritogenesis via a lipid-raft-associated Ca^{2+}/calmodulin-dependent protein kinase CLICK-III/CaMKIγ. Neuron 54: 755-770.
7. Online Mendelian Inheritance in Man, OMIM™. 2007. Johns Hopkins University, Baltimore, MD. MIM Number: 300680. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
8. Deb, T.B., et al. 2008. Pregnancy-upregulated nonubiquitous calmodulin kinase induces ligand-independent EGFR degradation. Am. J. Physiol., Cell Physiol. 295: C365-C377.

CHROMOSOMAL LOCATION

Genetic locus: PNCK (human) mapping to Xq28.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.

PRODUCT

CaMKIβ 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 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see CaMKIβ shRNA Plasmid (h): sc-91129-SH and CaMKIβ shRNA (h) Lentiviral Particles: sc-91129-V as alternate gene silencing products.

For independent verification of CaMKIβ (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-91129A, sc-91129B and sc-91129C.

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 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

CaMKIβ siRNA (h) is recommended for the inhibition of CaMKIβ 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 µM in 66 µl. 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 CaMKIβ gene expression knockdown using RT-PCR Primer: CaMKIβ (h)-PR: sc-91129-PR (20 µl, 582 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.