SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKIδ siRNA (m): sc-141991

BACKGROUND

The Ca^{2+}/calmodulin-dependent protein kinases (CaMKs) comprise a structurally related subfamily of serine/threonine kinases. CaMK1δ (calcium/calmodulin-dependent protein kinase type 1δ), also known as CKLiK or CaM-K1, is a 385 amino acid protein that localizes to both the nucleus and the cytoplasm and contains one protein kinase domain. Expressed in a variety of tissues with higher expression in polymorphonuclear leukocytes, CaMK1δ functions to catalyze the ATP-dependent phosphorylation of target proteins and is thought to regulate calcium-mediated granulocyte function via a calcium-triggered signaling cascade. CaMK1δ is activated by CaM, which binds to and induces a conformational change in CaMK1δ, thereby allowing CaMKKα and CaMKKβ to phosphorylate and, subsequently activate CaMK1δ. Nucleotide polymorphisms in the gene encoding CaMK1δ may increase susceptibility to type 2 diabetes. Two isoforms of CaMK1δ exist due to alternative splicing events.

REFERENCES

1. Verploegen, S., et al. 2000. Identification and characterization of CKLiK, a novel granulocyte Ca^{++}/calmodulin-dependent kinase. Blood 96: 3215-3223.
2. Hook, S.S., et al. 2001. Ca^{2+}/CaM-dependent kinases: from activation to function. Annu. Rev. Pharmacol. Toxicol. 41: 471-505.
3. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 607957. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
4. Ishikawa, Y., et al. 2003. Identification and characterization of novel components of a Ca^{2+}/calmodulin-dependent protein kinase cascade in HeLa cells. FEBS Lett. 550: 57-63.
5. Verploegen, S., et al. 2005. Characterization of the role of CaMKI-like kinase (CKLiK) in human granulocyte function. Blood 106: 1076-1083.
6. Grarup, N., et al. 2008. Association testing of novel type 2 diabetes risk alleles in the JAZF1, CDC123/CAMK1D, TSPAN8, THADA, ADAMTS9, and NOTCH2 loci with Insulin release, Insulin sensitivity, and obesity in a population-based sample of 4,516 glucose-tolerant middle-aged Danes. Diabetes 57: 2534-2540.

CHROMOSOMAL LOCATION

Genetic locus: Camk1d (mouse) mapping to 2 A1.

PRODUCT

CaMKIδ siRNA (m) 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 CaMKIδ shRNA Plasmid (m): sc-141991-SH and CaMKIδ shRNA (m) Lentiviral Particles: sc-141991-V as alternate gene silencing products.

For independent verification of CaMKIδ (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-141991A, sc-141991B and sc-141991C.

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

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

GENE EXPRESSION MONITORING

CaMKIδ (C-9): sc-374028 is recommended as a control antibody for monitoring of CaMKIδ 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-IgGκ BP-HRP: sc-516102 or m-IgGκ 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-IgGκ BP-FITC: sc-516140 or m-IgGκ 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 CaMKIδ gene expression knockdown using RT-PCR Primer: CaMKIδ (m)-PR: sc-141991-PR (20 µl). 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.