# SANTA CRUZ BIOTECHNOLOGY, INC.

# CaMKIIy siRNA (h): sc-29898



BACKGROUND

Ca<sup>2+</sup>/calmodulin-dependent protein kinase II (CaMKII) is a Ca<sup>2+</sup>-signaling intermediate that contains  $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$  subunits. Calcium oscillations, autophosphorylation and subunit composition of CaMKII influences the level of regulation of cellular events, including cell cycle and transcription. Several CaMKIl $\gamma$  protein isoforms are present in biliary epithelium.

## REFERENCES

- Nghiem, P., et al. 1993. Cloning and analysis of two new isoforms of multifunctional Ca<sup>2+</sup>/calmodulin-dependent protein kinase. Expression in multiple human tissues. J. Biol. Chem. 268: 5471-5479.
- 2. Kwiatkowski, A.P. and McGill, J.M. 2000. Alternative splice variant of  $\gamma$  calmodulin-dependent protein kinase II alters activation by calmodulin. Arch. Biochem. Biophys. 378: 377-383.
- 3. Bui, J.D., et al. 2000. A role for CaMKII in T cell memory. Cell 100: 457-467.
- Lorenz, J.M., et al. 2002. Differential autophosphorylation of CaMKII from phasic and tonic smooth muscle tissues. Am. J. Physiol., Cell. Physiol. 283: 1399-1413.
- Gloyn, A.L., et al. 2002. Human calcium/calmodulin-dependent protein kinase II γ gene (CAMK2G): cloning, genomic structure and detection of variants in subjects with type II diabetes. Diabetologia 45: 580-583.
- 6. Gaertner, T.R., et al. 2004. Comparative analyses of the three-dimensional structures and enzymatic properties of  $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$  isoforms of Ca<sup>2+-</sup> calmodulin-dependent protein kinase II. J. Biol. Chem. 279: 12484-12494.
- 7. LocusLink Report (LocusID: 818). http://www.ncbi.nlm.nih.gov/LocusLink/

# CHROMOSOMAL LOCATION

Genetic locus: CAMK2G (human) mapping to 10q22.2.

# PRODUCT

CaMKII $\gamma$  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 CaMKII $\gamma$  shRNA Plasmid (h): sc-29898-SH and CaMKII $\gamma$  shRNA (h) Lentiviral Particles: sc-29898-V as alternate gene silencing products.

For independent verification of CaMKII $\gamma$  (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-29898A, sc-29898B and sc-29898C.

## 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

 $CaMKII_{\gamma}\ siRNA$  (h) is recommended for the inhibition of  $CaMKII_{\gamma}\ expression$  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**

CaMKII<sub>Y</sub> (8G10C1): sc-517278 is recommended as a control antibody for monitoring of CaMKII<sub>Y</sub> 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<sup>TM</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> 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<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## **RT-PCR REAGENTS**

Semi-quantitative RT-PCR may be performed to monitor CaMKII<sub>Y</sub> gene expression knockdown using RT-PCR Primer: CaMKII<sub>Y</sub> (h)-PR: sc-29898-PR (20  $\mu$ I, 434 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

- Saxena, M., et al. 2016. Bacterial DNA protects monocytic cells against HIV-Vpr-induced mitochondrial membrane depolarization. J. Immunol. 196: 3754-3767.
- Qiu, Y., et al. 2016. Hsp70-1: upregulation via selective phosphorylation of heat shock factor 1 during coxsackieviral infection and promotion of viral replication via the AU-rich element. Cell. Mol. Life Sci. 73: 1067-1084.

## **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.