

# CaMKII $\delta$ (L-04): sc-100362

## BACKGROUND

The Ca<sup>2+</sup>/calmodulin-dependent protein kinases (CaM kinases) comprise a structurally related subfamily of serine/threonine kinases which include CaMKI, CaMKII and CaMKIV. CaMKII is a ubiquitously expressed serine/threonine protein kinase that is activated by Ca<sup>2+</sup> and calmodulin (CaM) and has been implicated in regulation of the cell cycle and transcription. There are four CaMKII isozymes, designated  $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$ , which may or may not be co-expressed in the same tissue type. CaMKIV is stimulated by Ca<sup>2+</sup> and CaM but also requires phosphorylation by a CaMK for full activation. Stimulation of the T cell receptor CD3 signaling complex with an anti-CD3 monoclonal antibody leads to a 10-40 fold increase in CaMKIV activity. An additional kinase, CaMKK, functions to activate CaMKI through the specific phosphorylation of the regulatory threonine residue at position 177.

## REFERENCES

1. Tombes, R.M., et al. 1995. G<sub>1</sub> cell cycle arrest apoptosis are induced in NIH/3T3 cells by KN-93, an inhibitor of CaMKII (the multifunctional Ca<sup>2+</sup>/CaM kinase). *Cell Growth Differ.* 6: 1063-1070.
2. Baltas, L.G., et al. 1995. The cardiac sarcoplasmic reticulum phospholamban kinase is a distinct  $\delta$ -CaM kinase isozyme. *FEBS Lett.* 373: 71-75.

## CHROMOSOMAL LOCATION

Genetic locus: CAMK2D (human) mapping to 4q26; Camk2d (mouse) mapping to 3 G1.

## SOURCE

CaMKII $\delta$  (L-04) is a mouse monoclonal antibody raised against recombinant CaMKII $\delta$  of human origin.

## PRODUCT

Each vial contains 100  $\mu$ g IgG<sub>2b</sub> lambda light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

CaMKII $\delta$  (L-04) is recommended for detection of CaMKII $\delta$  of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for CaMKII $\delta$  siRNA (h): sc-38953, CaMKII $\delta$  siRNA (m): sc-38954, CaMKII $\delta$  siRNA (r): sc-270384, CaMKII $\delta$  shRNA Plasmid (h): sc-38953-SH, CaMKII $\delta$  shRNA Plasmid (m): sc-38954-SH, CaMKII $\delta$  shRNA Plasmid (r): sc-270384-SH, CaMKII $\delta$  shRNA (h) Lentiviral Particles: sc-38953-V, CaMKII $\delta$  shRNA (m) Lentiviral Particles: sc-38954-V and CaMKII $\delta$  shRNA (r) Lentiviral Particles: sc-270384-V.

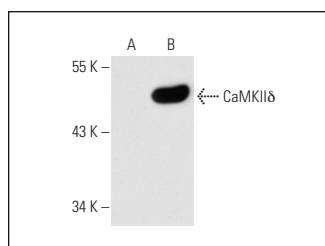
Molecular Weight of CaMKII $\delta$ : 54 kDa.

Positive Controls: CaMKII $\delta$  (h): 293T Lysate: sc-115074 or mouse brain extract: sc-2253.

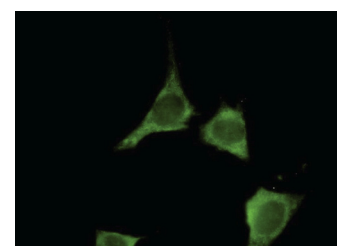
## RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG $\lambda$  BP-HRP: sc-516132 or m-IgG $\lambda$  BP-HRP (Cruz Marker): sc-516132-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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use m-IgG $\lambda$  BP-FITC: sc-516185 or m-IgG $\lambda$  BP-PE: sc-516186 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

## DATA



CaMKII $\delta$  (L-04): sc-100362. Western blot analysis of CaMKII $\delta$  expression in non-transfected: sc-117752 (A) and human CaMKII $\delta$  transfected: sc-115074 (B) 293T whole cell lysates.



CaMKII $\delta$  (L-04): sc-100362. Immunofluorescence staining of paraformaldehyde-fixed NIH/3T3 cells showing cytoplasmic localization.

## SELECT PRODUCT CITATIONS

1. Ma, H., et al. 2014.  $\gamma$ CaMKII shuttles Ca<sup>2+</sup>/CaM to the nucleus to trigger CREB phosphorylation and gene expression. *Cell* 159: 281-294.
2. Wang, X., et al. 2018. Chemotherapy-induced differential cell cycle arrest in B-cell lymphomas affects their sensitivity to Wee1 inhibition. *Haematologica* 103: 466-476.
3. Nicole, O., et al. 2018. A novel role for CAMKII $\beta$  in the regulation of cortical neuron migration: implications for neurodevelopmental disorders. *Mol. Psychiatry* 23: 2209-2226.
4. Nhieu, J., et al. 2020. Noncanonical retinoic acid signaling. *Meth. Enzymol.* 637: 261-281.
5. Dalal, P.J., et al. 2021. Spatiotemporal restriction of endothelial cell calcium signaling is required during leukocyte transmigration. *J. Exp. Med.* 218: e20192378.
6. Liu, J., et al. 2022. Calcium channel  $\alpha$ 2 $\delta$ 1 is essential for pancreatic tumor-initiating cells through sequential phosphorylation of PKM2. *Cell. Mol. Gastroenterol. Hepatol.* E-published.

## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

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