SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKIIδ (L-04): sc-100362

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The Ca^{2+}/calmodulin-dependent protein kinases (CaM kinases) comprise a structurally related subfamily of serine/threonine kinases which include CaMKI, CaMKII and CaMKIV. CaMKII is an 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. There are four CaMKII isozymes, designated α, β, γ and δ, which may or may not be co-expressed in the same tissue type. CaMKIV is stimulated by Ca^{2+} 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_1 cell cycle arrest apoptosis are induced in NIH/3T3 cells by KN-93, an inhibitor of CaMKII (the multifunctional Ca^{2+}/CaM kinase). Cell Growth Differ. 6: 1063-1070.
2. Baltas, L.G., et al. 1995. The cardiac sarcoplasmic reticulum phospholamban kinase is a distinct δ-CaM kinase isozyme. FEBS Lett. 373: 71-75.

CHROMOSOMAL LOCATION

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

SOURCE

CaMKIIδ (L-04) is a mouse monoclonal antibody raised against recombinant CaMKIIδ of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2b} lambda light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

CaMKIIδ (L-04) is recommended for detection of CaMKIIδ of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg 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 CaMKIIδ siRNA (h): sc-38953, CaMKIIδ siRNA (m): sc-38954, CaMKIIδ siRNA (r): sc-270384, CaMKIIδ shRNA Plasmid (h): sc-38953-SH, CaMKIIδ shRNA Plasmid (m): sc-38954-SH, CaMKIIδ shRNA Plasmid (r): sc-270384-SHCaMKIIδ shRNA (h) Lentiviral Particles: sc-38953-V, CaMKIIδ shRNA (m) Lentiviral Particles: sc-38954-V and CaMKIIδ shRNA (r) Lentiviral Particles: sc-270384-V.

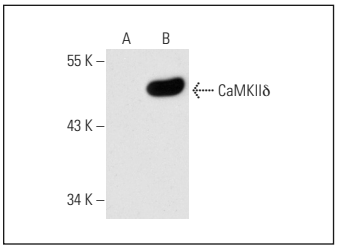
Molecular Weight of CaMKIIδ: 54 kDa.

Positive Controls: CaMKIIδ (h): 293T Lysate: sc-115074 or mouse brain extract: sc-2253.

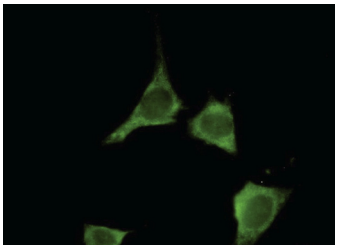
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGλ BP-HRP: sc-516132 or m-IgGλ 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-IgGλ BP-FITC: sc-516185 or m-IgGλ 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



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



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

SELECT PRODUCT CITATIONS

1. Ma, H., et al. 2014. γCaMKII shuttles Ca^{2+}/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 CAMKIIβ 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.

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.

PROTOCOLS

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