SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKI (H-125): sc-33165

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 a 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 coexpressed 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. Hama, N., et al. 1995. Calcium/calmodulin-dependent protein kinase II downregulates both calcineurin and protein kinase C-mediated pathways for cytokine gene transcription in human T cells. J. Exp. Med. 181: 1217-1222.
3. 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: CAMK1 (human) mapping to 3p25.3, CAMK1D (human) mapping to 10p13; Camk1 (mouse) mapping to 6 E3, Camk1d (mouse) mapping to 2 A1.

SOURCE

CaMKI (H-125) is a rabbit polyclonal antibody raised against amino acids 246-370 mapping at the C-terminus of CaMKI of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

CaMKI (H-125) is recommended for detection of CaMKI and CaMKIδ 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; may cross-react with CaMKIβ and CaMKIγ1:30, dilution range 1:30-1:3000). CaMKI (H-125) is also recommended for detection of CaMKI and CaMKIδ in additional species, including equine, canine, bovine and porcine.

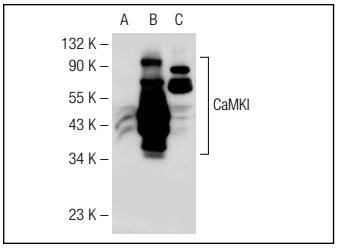
Molecular Weight of CaMKI: 41 kDa.

Positive Controls: CaMKI (h): 293T Lysate: sc-177014, mouse brain extract: sc-2253 or HL-60 whole cell lysate: sc-2209.

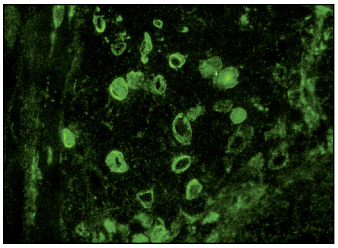
RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 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 goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

DATA



CaMKI (H-125): sc-33165. Western blot analysis of CaMKI expression in non-transfected: sc-117752 (**A**) and human CaMKI transfected: sc-177014 (**B**) 293T whole cell lysates and mouse brain tissue extract (**C**).



CaMKI (H-125): sc-33165. Immunofluorescence staining of normal mouse intestine frozen section showing perinuclear staining.

SELECT PRODUCT CITATIONS

1. Davare, M.A., et al. 2010. Calmodulin-kinases regulate basal and estrogen stimulated medulloblastoma migration via Rac1. J. Neurooncol. 104: 65-82.

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 or our catalog for detailed protocols and support products.