SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKIIα (B-2): sc-55508

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.

CHROMOSOMAL LOCATION

Genetic locus: CAMK2A (human) mapping to 5q32; Camk2a (mouse) mapping to 18 E1.

SOURCE

CaMKIIα (B-2) is a mouse monoclonal antibody raised against amino acids 303-478 of CaMKIIα of mouse origin.

PRODUCT

Each vial contains 200 µg IgG_3 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

STORAGE

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

APPLICATIONS

CaMKIIα (B-2) is recommended for detection of CaMKIIα 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

CaMKIIα (B-2) is also recommended for detection of CaMKIIα in additional species, including bovine and porcine.

Suitable for use as control antibody for CaMKIIα siRNA (h): sc-29900, CaMKIIα siRNA (m): sc-29901, CaMKIIα siRNA (r): sc-156070, CaMKIIα shRNA Plasmid (h): sc-29900-SH, CaMKIIα shRNA Plasmid (m): sc-29901-SH, CaMKIIα shRNA Plasmid (r): sc-156070-SH, CaMKIIα shRNA (h) Lentiviral Particles: sc-29900-V, CaMKIIα shRNA (m) Lentiviral Particles: sc-29901-V and CaMKIIα shRNA (r) Lentiviral Particles: sc-156070-V.

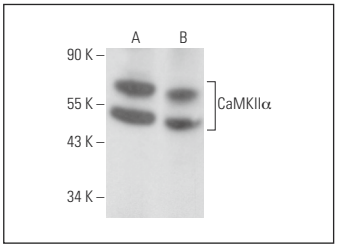
Molecular Weight of CaMKIIα: 50 kDa.

Positive Controls: mouse brain extract: sc-2253, rat brain extract: sc-2392 or rat hippocampus tissue extract.

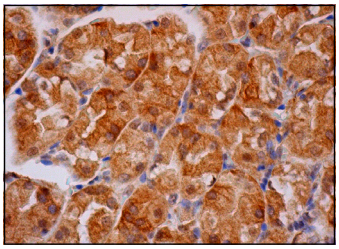
RECOMMENDED SUPPORT REAGENTS

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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) 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. 4) Immunohistochemistry: use m-IgGκ BP-HRP: sc-516102 with DAB, 50X: sc-24982 and Immunohistomount: sc-45086, or Organo/Limonene Mount: sc-45087.

DATA



CaMKIIα (B-2): sc-55508. Western blot analysis of CaMKIIα expression in mouse brain (**A**) and rat hippocampus (**B**) tissue extracts.



CaMKIIα (B-2): sc-55508. Immunoperoxidase staining of formalin fixed, paraffin-embedded human upper stomach tissue showing cytoplasmic staining of glandular cells.

SELECT PRODUCT CITATIONS

1. Haidar, M., et al. 2015. Transforming growth factor β2 promotes transcription of COX2 and EP4, leading to a prostaglandin E2-driven autostimulatory loop that enhances virulence of *Theileria annulata*-transformed macrophages. Infect. Immun. 83: 1869-1880.
2. Song, Y., et al. 2019. Inhibition of LPS-induced brain injury by NR2B antagonists through reducing assembly of NR2B-CaMKII-PSD95 signal module. Immunopharmacol. Immunotoxicol. 3: 1-9.

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.

CONJUGATES

See **CaMKII (G-1): sc-5306** for CaMKII antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.