SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKIIβ (C-20): sc-1540

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: CAMK2B (human) mapping to 7p13, CAMK2D (human) mapping to 4q26; Camk2b (mouse) mapping to 11 A1, Camk2d (mouse) mapping to 3 G1.

SOURCE

CaMKIIβ (C-20) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the C-terminus of CaMKIIβ of mouse origin.

PRODUCT

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

Blocking peptide available for competition studies, sc-1540 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

APPLICATIONS

CaMKIIβ (C-20) is recommended for detection of CaMKIIβ and 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, 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); partially cross-reactive with CaMKIIγ and CaMKIIα.

CaMKIIβ (C-20) is also recommended for detection of CaMKIIβ and CaMKIIδ in additional species, including equine, canine, bovine, porcine and avian.

Molecular Weight of CaMKIIβ: 58-64 kDa.

Positive Controls: mouse brain extract: sc-2253 or HeLa whole cell lysate: sc-2200.

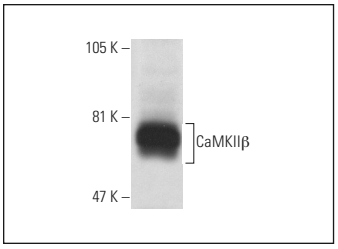
STORAGE

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

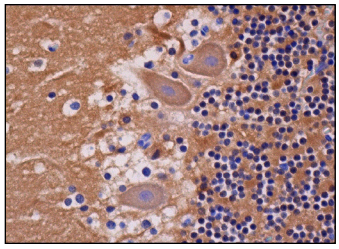
RESEARCH USE

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

DATA



CaMKIIβ (C-20): sc-1540. Western blot analysis of CaMKIIβ expression in mouse brain tissue extract.



CaMKIIβ (C-20): sc-1540. Immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebellum tissue showing cytoplasmic staining of Purkinje cells and neuropil staining in granular and molecular layers.

SELECT PRODUCT CITATIONS

1. Blanquet, P.R., et al. 1997. Brain-derived neurotrophic factor increases Ca^{2+}/calmodulin-dependent protein kinase II activity in hippocampus. J. Biol. Chem. 272: 24133-24136.
2. Gringhuis, S.I., et al. 1997. The Ca^{2+}/calmodulin-dependent kinase type IV is involved in the CD5-mediated signaling pathway in human T lymphocytes. J. Biol. Chem. 272: 31809-31820.
3. Fährmann, M., et al. 1999. Ca^{2+}/calmodulin-dependent protein kinase II isoenzymes γ and δ are both present in H^+/K^+-ATPase-containing rabbit gastric tubulovesicles. Eur. J. Biochem. 266: 1036-1042.
4. Menco, B.P. 2005. The fine-structural distribution of G-protein receptor kinase 3, β-arrestin-2, Ca^{2+}/calmodulin-dependent protein kinase II and phosphodiesterase PDE1C2, and a Cl^- cotransporter in rodent olfactory epithelia. J. Neurocytol. 34: 11-36.
5. Woods, A., et al. 2005. Ca^{2+}/calmodulin-dependent protein kinase kinase-β acts upstream of AMP-activated protein kinase in mammalian cells. Cell Metab. 2: 21-33.
6. Martinez-Pena y Valenzuela, I., et al. 2010. Calcium/calmodulin kinase II-dependent acetylcholine receptor cycling at the mammalian neuromuscular junction *in vivo*. J. Neurosci. 30: 12455-12465.
7. Law, M.J., et al. 2010. ATR-X syndrome protein targets tandem repeats and influences allele-specific expression in a size-dependent manner. Cell 143: 367-378.
8. Yen, Y.H., et al. 2011. A study of the spatial protein organization of the postsynaptic density isolated from porcine cerebral cortex and cerebellum. Mol. Cell. Proteomics 10: M110.

PROTOCOLS

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