SANTA CRUZ BIOTECHNOLOGY, INC.

CaMKIV (A-3): sc-166156

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.

CHROMOSOMAL LOCATION

Genetic locus: CAMK4 (human) mapping to 5q22.1.

SOURCE

CaMKIV (A-3) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 423-461 at the C-terminus of CaMKIV of human origin.

PRODUCT

Each vial contains 200 µg IgG_{2b} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CaMKIV (A-3) is available conjugated to agarose (sc-166156 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-166156 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-166156 PE), fluorescein (sc-166156 FITC), Alexa Fluor® 488 (sc-166156 AF488), Alexa Fluor® 546 (sc-166156 AF546), Alexa Fluor® 594 (sc-166156 AF594) or Alexa Fluor® 647 (sc-166156 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-166156 AF680) or Alexa Fluor® 790 (sc-166156 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-166156 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

RESEARCH USE

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

APPLICATIONS

CaMKIV (A-3) is recommended for detection of CaMKIV and Calspermin of human origin by Western Blotting (starting dilution 1:100, 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).

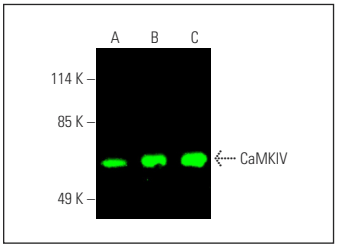
Molecular Weight of CaMKIV: 60 kDa.

Positive Controls: SH-SY5Y cell lysate: sc-3812, Ramos cell lysate: sc-2216 or Jurkat whole cell lysate: sc-2204.

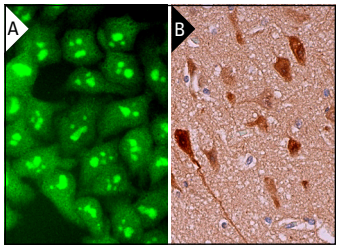
RECOMMENDED SUPPORT REAGENTS

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



CaMKIV (A-3): sc-166156. Near-infrared western blot analysis of CaMKIV expression in Ramos (**A**), Jurkat (**B**) and SH-SY5Y (**C**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 680: sc-516180.



CaMKIV (A-3): sc-166156. Immunofluorescence staining of formalin-fixed HeLa cells showing nucleolar, nuclear and cytoplasmic localization (**A**). Immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebral cortex tissue showing nuclear and cytoplasmic staining of neuronal cells and neuropil staining (**B**).

SELECT PRODUCT CITATIONS

1. Wang, J.D., et al. 2015. A pivotal role of Fos-mediated BECN1/Beclin 1 upregulation in dopamine D2 and D3 receptor agonist-induced autophagy activation. Autophagy 11: 2057-2073.
2. Kotla, S., et al. 2017. Heterodimers of the transcriptional factors NFATc3 and FosB mediate tissue factor expression for 15S-hydroxyeicosatetraenoic acid-induced monocyte trafficking. J. Biol. Chem. 292: 14885-14901.
3. Sabbir, M.G. 2020. CAMKK2-CAMK4 signaling regulates transferrin trafficking, turnover, and iron homeostasis. Cell Commun. Signal. 18: 80.
4. Sabbir, M.G., et al. 2020. Hypomorphic CAMKK2 in EA.hy926 endothelial cells causes abnormal transferrin trafficking, iron homeostasis and glucose metabolism. Biochim. Biophys. Acta Mol. Cell Res. 1867: 118763.
5. Li, Y., et al. 2022. Anti-phospholipase A2 receptor antibodies directly induced podocyte damage *in vitro*. Ren. Fail. 44: 304-313.

STORAGE

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