

p-CaMKII (22B1): sc-32289

BACKGROUND

The Ca²⁺/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 Ca²⁺ 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 types. CaMKIV is stimulated by Ca²⁺ 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. G₁ cell cycle arrest apoptosis are induced in NIH 3T3 cells by KN-93, an inhibitor of CaMK-II (the multifunctional Ca²⁺/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.

SOURCE

p-CaMKII (22B1) is a mouse monoclonal antibody raised against a synthetic peptide corresponding to residues 281-294 CaM kinase II α subunit of rat origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

p-CaMKII (22B1) is available conjugated to agarose (sc-32289 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-32289 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-32289 PE), fluorescein (sc-32289 FITC), Alexa Fluor[®] 488 (sc-32289 AF488), Alexa Fluor[®] 546 (sc-32289 AF546), Alexa Fluor[®] 594 (sc-32289 AF594) or Alexa Fluor[®] 647 (sc-32289 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor[®] 680 (sc-32289 AF680) or Alexa Fluor[®] 790 (sc-32289 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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APPLICATIONS

p-CaMKII (22B1) is recommended for detection of Thr 286 phosphorylated CaMKII of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ g of total protein (1 ml of cell lysate)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

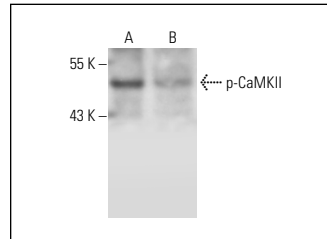
Molecular Weight of p-CaMKII: 50 kDa.

Positive Controls: rat brain extract: sc-2392 or Sol8 cell lysate: sc-2249.

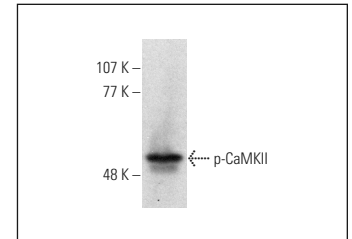
STORAGE

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

DATA



p-CaMKII (22B1): sc-32289. Western blot analysis of CaMKII phosphorylation in untreated (A) and lambda phosphatase treated (B) rat brain tissue extract.



p-CaMKII (22B1) HRP: sc-32289 HRP. Direct western blot analysis of CaMKII phosphorylation in Sol8 whole cell lysate.

SELECT PRODUCT CITATIONS

1. Fan, R., et al. 2005. G protein-coupled receptor activation rapidly stimulates focal adhesion kinase phosphorylation at Ser 843. *J. Biol. Chem.* 280: 24212-24220.
2. Zhong, W., et al. 2014. Serotonin 5-HT3 receptor-mediated vomiting occurs via the activation of Ca²⁺/CaMKII-dependent ERK1/2 signaling in the least shrew (*Cryptotis parva*). *PLoS ONE* 9: e104718.
3. Tapia-Rojas, C., et al. 2015. Andrographolide activates the canonical Wnt signalling pathway by a mechanism that implicates the non-ATP competitive inhibition of GSK-3 β : autoregulation of GSK-3 β *in vivo*. *Biochem. J.* 466: 415-430.
4. Ramírez, V.T., et al. 2016. Wnt-5a/Frizzled9 receptor signaling through the G α_o -G $\beta\gamma$ complex regulates dendritic spine formation. *J. Biol. Chem.* 291: 19092-19107.
5. Fan, J., et al. 2017. Amelioration of apelin-13 in chronic normobaric hypoxia-induced anxiety-like behavior is associated with an inhibition of NF κ B in the hippocampus. *Brain Res. Bull.* 130: 67-74.
6. Ravi, P., et al. 2018. FMRFa receptor stimulated Ca²⁺ signals alter the activity of flight modulating central dopaminergic neurons in *Drosophila melanogaster*. *PLoS Genet.* 14: e1007459.
7. Miranda-Silva, D., et al. 2019. Characterization of biventricular alterations in myocardial (reverse) remodelling in aortic banding-induced chronic pressure overload. *Sci. Rep.* 9: 2956.
8. Tan, H., et al. 2020. Peimine inhibits the growth and motility of prostate cancer cells and induces apoptosis by disruption of intracellular calcium homeostasis through Ca²⁺/CaMKII/JNK pathway. *J. Cell. Biochem.* 121: 81-92.

RESEARCH USE

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