

# CaMKK $\alpha$ (F-2): sc-17827

## BACKGROUND

The Ca<sup>2+</sup>/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<sup>2+</sup> and calmodulin (CaM) and has been implicated in regulation of the cell cycle and transcription. There are four CaMKII isozymes designated  $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\delta$ , which may or may not be co-expressed in the same tissue type. CaMKIV is stimulated by Ca<sup>2+</sup> 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: Camkk1 (mouse) mapping to 11 B4.

## SOURCE

CaMKK $\alpha$  (F-2) is a mouse monoclonal antibody raised against amino acids 1-73 of Ca<sup>2+</sup>/calmodulin-dependent protein kinase kinase  $\alpha$  (CaMKK $\alpha$ ) of rat origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>2a</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CaMKK $\alpha$  (F-2) is available conjugated to agarose (sc-17827 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-17827 HRP), 200  $\mu$ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-17827 PE), fluorescein (sc-17827 FITC), Alexa Fluor<sup>®</sup> 488 (sc-17827 AF488), Alexa Fluor<sup>®</sup> 546 (sc-17827 AF546), Alexa Fluor<sup>®</sup> 594 (sc-17827 AF594) or Alexa Fluor<sup>®</sup> 647 (sc-17827 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor<sup>®</sup> 680 (sc-17827 AF680) or Alexa Fluor<sup>®</sup> 790 (sc-17827 AF790), 200  $\mu$ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

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## APPLICATIONS

CaMKK $\alpha$  (F-2) is recommended for detection of CaMKK $\alpha$  of mouse and rat origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:500), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g 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).

Suitable for use as control antibody for CaMKK $\alpha$  siRNA (m): sc-29905, CaMKK $\alpha$  shRNA Plasmid (m): sc-29905-SH and CaMKK $\alpha$  shRNA (m) Lentiviral Particles: sc-29905-V.

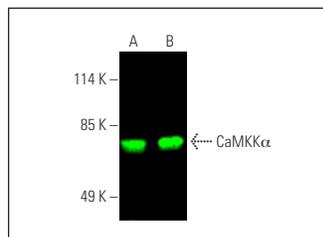
Molecular Weight of CaMKK $\alpha$ : 63 kDa.

Positive Controls: PC-12 whole cell lysate: sc-2250 or rat brain extract: sc-2392.

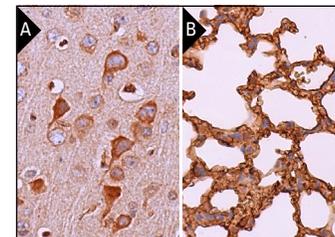
## STORAGE

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

## DATA



CaMKK $\alpha$  (F-2): sc-17827. Near-infrared western blot analysis of CaMKK $\alpha$  expression in PC-12 whole cell lysate (A) and rat brain tissue extract (B). Blocked with UltraCruz<sup>®</sup> Blocking Reagent: sc-516214. Detection reagent used: m-IgG $\kappa$  BP-CFL 680: sc-516180.



CaMKK $\alpha$  (F-2): sc-17827. Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse brain tissue showing cytoplasmic staining of neuronal cells, glial cells and endothelial cells (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse lung tissue showing cytoplasmic and membrane staining of pneumocytes and macrophages and cytoplasmic staining of respiratory epithelial cells (B).

## SELECT PRODUCT CITATIONS

- Hinkley, J.M., et al. 2014. Constitutively active CaMKK $\alpha$  stimulates skeletal muscle glucose uptake in Insulin-resistant mice *in vivo*. *Diabetes* 63: 142-151.
- Dai, S., et al. 2017. Methyl- $\beta$ -cyclodextrin restores impaired autophagy flux in Niemann-Pick C1-deficient cells through activation of AMPK. *Autophagy* 13: 1435-1451.
- Calcutt, N.A., et al. 2017. Selective antagonism of muscarinic receptors is neuroprotective in peripheral neuropathy. *J. Clin. Invest.* 127: 608-622.
- Li, B., et al. 2020. Neuronal inactivity co-opts LTP machinery to drive potassium channel splicing and homeostatic spike widening. *Cell* 181: 1547-1565.e15.
- Bernhem, K., et al. 2021. Super-resolution microscopy reveals that Na<sup>+</sup>/K<sup>+</sup>-ATPase signaling protects against glucose-induced apoptosis by deactivating Bad. *Cell Death Dis.* 12: 739.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.