

Anti-CaMKII (Alpha-Specific) Monoclonal Antibody

Catalog Number: M03241-1

About CaMKII

CaMKII is an important member of the calcium/calmodulin-activated protein kinase family, functioning in neural synaptic stimulation and T-cell receptor signaling (1, 2). CaMKII is expressed in many different tissues but is specifically found in the neurons of the forebrain and its mRNA is found within the dendrites and the soma of the neuron. The CaMKII that is found in the neurons consist of two subunits of 52 (termed alpha genes) and 60 kDa (beta genes). CaMKII has catalytic and regulatory domains, as well as an ATP-binding domain, and a consensus phosphorylation site (3-7). The binding of Ca²⁺/calmodulin to its regulatory domain releases its auto inhibitory effect and activates the kinase (8). This kinase activation results in autophosphorylation at threonine 286 (8). The threonine phosphorylation state of CaMKII can be regulated through PP1/PKA. Whereas PP1 (protein phosphatase 1) dephosphorylates phospho-CaMKII at Thr286, PKA (protein kinase A) prevents this dephosphorylation (9). Autophosphorylation also enables CaMKII to attain an enhanced affinity for NMDA receptors in postsynaptic densities (10-12).

Overview

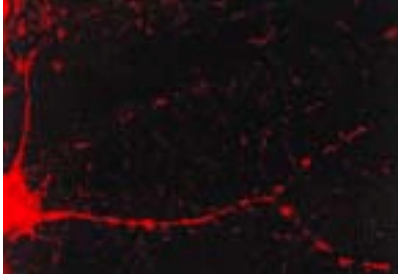
Product Name	Anti-CaMKII (Alpha-Specific) Monoclonal Antibody
Reactive Species	Bovine, Human, Mouse, Rat
Description	Boster Bio Anti-CaMKII (Alpha-Specific) Monoclonal Antibody catalog # M03241-1. Tested in ELISA, IP, IF, IHC, WB applications. This antibody reacts with Human, Mouse, Rat.
Application	ELISA, IP, IF, IHC, ICC, WB, RIA
Clonality	Monoclonal 6G9
Formulation	PBS pH7.4, 50% glycerol, 0.09% sodium azide
Storage Instructions	Store at -20°C for one year. Avoid repeated freeze-thaw cycles.
Host	Mouse
Uniprot ID	P11798

Technical Details

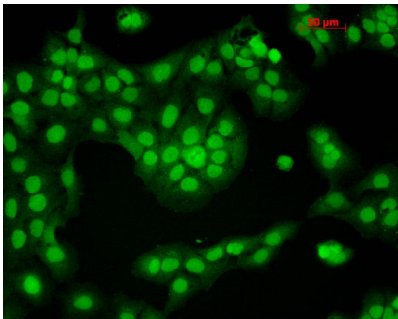
Immunogen	Partially purified rat CaMKII
Predicted Reactive Species	Chimpanzee, Hamster
Cross Reactivity	Detects ~50-60kDa. Recognizes both phosphorylated and non-phosphorylated forms.
Isotype	IgG1
Form	liquid
Concentration	1 mg/ml

Purification	Protein G Purified
Suggested Dilutions	Dilute the sample so that the expected range of concentrations fall within the detection range of this kit. If the expected range of concentration is unknown, a pilot test should be conducted to decide the optimal dilution ratio for your samples. Some PubMed article(s) citing the expression level of this target are as follows: Boster Bio's internal QC testing used: WB (1:10000), IHC (1:2000), ICC/IF (1:50); optimal dilutions for assays should be determined by the user.

Anti-CaMKII (Alpha-Specific) Monoclonal Antibody (M03241-1) Images



Immunocytochemistry/Immunofluorescence analysis using Mouse Anti-CaMKII Monoclonal Antibody, Clone 6G9 (M03241-1). Tissue: dissociated hippocampal neurons. Species: Mouse. Fixation: Cold 4% paraformaldehyde/0.2% glutaraldehyde in 0.1M sodium phosphate buffer. Primary Antibody: Mouse Anti-CaMKII Monoclonal Antibody (M03241-1) at 1:1000 for 12 hours at 4°C. Secondary Antibody: FITC Goat Anti-Mouse IgG (green) at 1:50 for 30 minutes at RT. Magnification: 10X. Courtesy of: Mary Kennedy, Caltech.



Immunocytochemistry/Immunofluorescence analysis using Mouse Anti-CaMKII Monoclonal Antibody, Clone 6G9 (M03241-1). Tissue: HaCaT cells. Species: Human. Fixation: Cold 100% methanol for 10 minutes at -20°C. Primary Antibody: Mouse Anti-CaMKII Monoclonal Antibody (M03241-1) at 1:100 for 1 hour at RT. Secondary Antibody: FITC Goat Anti-Mouse (green) at 1:50 for 1 hour at RT. Localization: Nuclear Staining.

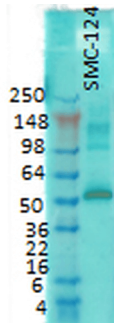


Figure 2. Western blot analysis of Camk2a using anti-Camk2a antibody (M03241-1). Electrophoresis was performed on a 5-20% SDS-PAGE gel at 70V (Stacking gel) / 90V (Resolving gel) for 2-3 hours. The sample well of each lane was loaded with 50ug of sample under reducing conditions. After Electrophoresis, proteins were transferred to a Nitrocellulose membrane at 150mA for 50-90 minutes. Blocked the membrane with 5% Non-fat Milk/ TBS for 1.5 hour at RT. The membrane was incubated with rabbit anti-Camk2a antigen affinity purified polyclonal antibody (Catalog # M03241-1) at 0.5 ug/mL overnight at 4°C, then washed with TBS-0.1%Tween 3 times with 5 minutes each and probed with a goat anti-Mouse IgG-HRP secondary antibody at a dilution of 1:10000 for 1.5 hour at RT. The signal is developed using an Enhanced Chemiluminescent detection (ECL) kit (Catalog # SA1021) with Tanon 5200 system. A specific band was detected for Camk2a.

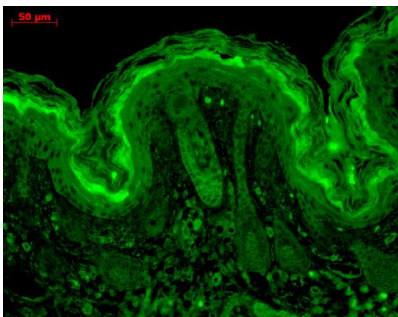


Figure 3. IHC analysis of Camk2a using anti-Camk2a antibody (M03241-1). Camk2a was detected in paraffin-embedded section. Heat mediated antigen retrieval was performed in citrate buffer (pH6, epitope retrieval solution) for 20 mins. The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 1ug/ml rabbit anti-Camk2a Antibody (M03241-1) overnight at 4°C. Biotinylated goat anti Mouse IgG antibody was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC)(Catalog

SA1021) with DAB as the chromogen.

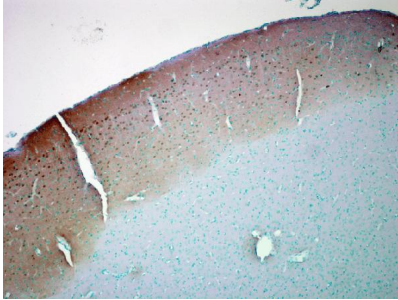


Figure 4. IHC analysis of Camk2a using anti-Camk2a antibody (M03241-1). Camk2a was detected in paraffin-embedded section. Heat mediated antigen retrieval was performed in citrate buffer (pH6, epitope retrieval solution) for 20 mins. The tissue section was blocked with 10% goat serum. The tissue section was then incubated with 1ug/ml rabbit anti-Camk2a Antibody (M03241-1) overnight at 4°C. Biotinylated goat anti Mouse IgG antibody was used as secondary antibody and incubated for 30 minutes at 37°C. The tissue section was developed using Streptavidin-Biotin-Complex (SABC)(Catalog # SA1021) with DAB as the chromogen.

4 Publications Citing This Product

1. PubMed ID: 10.3892/ol.2020.12020, Mechanism of transmembrane and coiled-coil domain 1 in the regulation of proliferation and migration of A549 cells
2. PubMed ID: 27451410, Inhibition of CaMKII α in the central nucleus of amygdala attenuates fentanyl-induced hyperalgesia in rats
3. PubMed ID: 25010576, Anti-Epileptic Effect of Ganoderma Lucidum Polysaccharides by Inhibition of Intracellular Calcium Accumulation and Stimulation of Expression of CaMKII α in Epileptic Hippocampal Neurons

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