

# Anti-CaMKII



## TECHNICAL SPECIFICATIONS

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## Mouse Anti-Calmodulin-Dependent Protein Kinase II (CaMKII) Monoclonal Antibody Product #: KAM-CA002

### Immunogen

Partially purified rat CaMKII (1).

### Specificity

This antibody detects an ~50-60 kDa protein, corresponding to the apparent molecular mass of CaMKII  $\alpha$ -subunit on SDS-PAGE immunoblots, in samples from mouse, rat, and bovine. Both the phosphorylated and non-phosphorylated forms are recognized. Expected reactivity includes the  $\alpha$ ,  $\delta$  and  $\gamma$  isoforms, but not the  $\beta$  isoform.

### Species Reactivity

mouse, rat, bovine

### Applications

Certified\*

Cited\*

Applications	Certified*	Cited*
Western Blot (Colorimetric) (16)	0.1 $\mu\text{g/mL}$	1:1,000
RIA (Quantitative WB) (1)		3-5 $\mu\text{g/mL}$
Immunohistochemistry (1)		Yes

\*These working dilutions are provided as suggestions only. Further dilutions may be possible. Each user should determine the optimal conditions for their own particular experiment.

### Positive Controls

Rat Brain Tissue Extract, Product#: LYT-RB100

Mouse Brain Tissue Extract, Product#: LYT-MB100

### Scientific Background

CaMKII $\alpha$ , the alpha subunit of Ca<sup>2+</sup> calmodulin-dependent protein kinase II is part of a family of multifunctional protein kinases which play a major role in Ca<sup>2+</sup>-mediated signal transduction. CaMKII $\alpha$  is expressed in many different tissues but is specifically found in the neurons of the forebrain and its mRNA is found within the dendrites as well as the soma of the neuron. The neuronal CaMKII consists of two major subunits of 52 and 60 kDa which are encoded by  $\alpha$ - and  $\beta$ -CaMKII genes, respectively. Additional isoforms are generated by alternative splicing of these as well as of the ubiquitous  $\gamma$ - and  $\delta$ -CaMKII genes. Each subunit has an ATP-binding domain (arginine-X-X-serine/threonine), consensus phosphorylation site, catalytic domain, and a centrally located regulatory domain which has calmodulin binding activity (2-6). Activation and autophosphorylation of CaMKII may regulate numerous neuronal processes which includes two forms of synaptic plasticity, long term potentiation and long term depression (7,8). Neuronal CaMKII subunits assemble as large multimeric holoenzymes. The C-terminal association domains of 6-12 subunits assemble into a central globular structure from which the N-terminal catalytic/regulatory domains extend radially like petals of a flower (9). The subunit composition of the rat forebrain CaMKII holoenzyme consists of heteromers composed of  $\alpha$  and  $\beta$  subunits at a ratio of 2:1 and homomers composed of only  $\alpha$  subunits. The association of CaMKII subunits leads to the positioning of their catalytic/regulatory domains in close proximity and the neighboring calmodulin-bound subunits cooperate to rapidly phosphorylate each other (10-12). Autophosphorylation also enables CaMKII to attain an enhanced affinity for NMDA receptors in postsynaptic densities (13-15).

### References

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Rev: 05/25/06

## CERTIFICATE OF ANALYSIS

# Anti-CaMKII

Product #: KAM-CA002

**Format:** Mouse immunoglobulin in phosphate buffered saline (PBS) pH 7.2, 0.09% azide, in 50% glycerol. This antibody was purified using Protein G chromatography.

**Concentration:** 1.0 mg/mL

**Host:** Mouse

**Antibody Type:** Monoclonal

**Clone#:** 6G9

**Isotype:** IgG<sub>1</sub>

**Certification:** 0.1  $\mu\text{g/mL}$  of KAM-CA002 was sufficient for detection of CaMKII in 20  $\mu\text{g}$  of Rat Brain Tissue Extract (product# LYT-RB100) by colorimetric immunoblot analysis using Stressgen's Goat anti-Mouse IgG:AP (product# SAB-101) as the secondary antibody.

**STORAGE & SHIPPING:** Store product at -20°C. Storage below -20°C is not recommended. Product may be stored for 2-4 weeks at 4°C. For optimal storage, aliquot to smaller portions and store at -20°C to avoid temperature fluctuations. For maximum product recovery centrifuge the product vial before removing cap. Shipped on gel packs.



**FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES:** This product is not to be used for diagnostic nor therapeutic purposes. By accepting this product, the user confirms that it will be used for research purposes only. Stressgen warrants that its products conform to the information published by Stressgen. Purchaser must determine the suitability of the product for their particular use. Please refer to the MSDS for product safety information.

# MATERIAL SAFETY DATA SHEET

## Section 1 - Product Identification and Use

**Product Name:** Mouse Anti-CaMKII Monoclonal Antibody **Product#** KAM-CA002

*This product is sold only for research use by qualified laboratory personnel, and is not to be used as a drug, medical device, food additive, cosmetic, nor household chemical. It is not to be used in diagnostic, therapeutic, consumer, agricultural, nor pesticidal applications.*

Manufacturer's Name: Stressgen Bioreagents Corporation  
Street Address: 5777 Hines Drive  
City, State, Zip Code: Ann Arbor, MI 48108 USA  
Phone: (800) 833-8651 (USA and Canada)  
Fax: (734) 668-2793

## Section 2 - Hazardous Ingredients

The physical, chemical and toxicological properties of these components have not been fully investigated. It is recommended that all laboratory personnel follow standard laboratory safety procedures when handling this product. Safety procedures should include wearing OSHA approved safety glasses, gloves and protective clothing. Direct physical contact with this product should be avoided.

<u>Known Hazardous Components</u>	<u>CAS Number</u>	<u>Percent</u>
Sodium Azide	26628-22-8	0.09

## Section 3 - Physical Data

This product consists of mouse immunoglobulin in phosphate buffered saline with 50% glycerol shipped on gel packs (dry ice overseas). The physical properties of this product have not been investigated thoroughly.

## Section 4 - Fire and Explosion Hazard

NOT APPLICABLE

## Section 5 - Reactivity Data

NOT APPLICABLE

## Section 6 - Toxicological Properties

May be harmful by inhalation, ingestion, or skin absorption. The toxicological properties of this product have not been investigated thoroughly. Exercise due caution.

## Section 7 - Preventative Measures

Wear chemical safety goggles and compatible chemical-resistant gloves. Avoid inhalation, contact with eyes, skin or clothing.

\*\*\*\*\*MULTIPLE COMPONENT SPILL OR LEAK PROCEDURES\*\*\*\*\*

- Wear protective equipment.
- Absorb on sand or vermiculite and place in closed containers for disposal.
- Dispose or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state and local environmental regulations.

## Section 8 - First Aid Measures

- If swallowed, wash out mouth with water, provided person is conscious. Call a physician.
- In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. If a rash or other irritation develops, call a physician.
- If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.
- In case of eye contact, flush with copious amounts of water for at least 15 minutes while separating the eyelids with fingers. Call a physician.

## Section 9 - Preparation

Prepared by: SBC	Phone#: (250) 744-2811	Created: 06/27/05	Modified: 05/25/06
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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Stressgen shall not be held liable for any damage resulting from handling or from contact with the above product. See the Technical Specification, Packing Slip, Invoice, and Product Catalogue for additional terms and conditions of sale.