



PhosphoSolutions®
Antibodies that work™

Colorado Biosciences Park
12635 East Montview Boulevard, #213
Aurora, CO 80045-7337
Tel: (888) 442-7100

Anti-Phospho-Thr²⁸⁶ CaM Kinase II

Catalog Number: p1005-286

Size: 100 µl

\$310.00

Product Description: Affinity purified rabbit polyclonal antibody

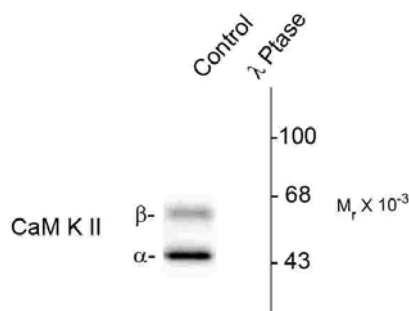
Applications: WB: 1:1000

Antigen: Phosphopeptide corresponding to amino acid residues surrounding the phospho-Thr²⁸⁶ found in rat brain CaM Kinase II.

Specifies reactivity: The antibody has been directly tested for reactivity in Western blots with rat tissue. It is anticipated that the antibody will react with human, mouse and *Xenopus* based on the fact that these species have 100% homology with the amino acid sequence used as antigen.

Biological Significance: Ca²⁺/calmodulin-dependent protein kinase II (CaM Kinase II) is a multi-functional calcium and calmodulin-dependent protein kinase that mediates cellular responses to a wide variety of intercellular signals (Kennedy, 1998; Schulman and Hanson, 1993). CaM Kinase II has been shown to regulate diverse cellular functions including synaptic plasticity, neurotransmitter synthesis and release, gene expression, ion channel function, carbohydrate metabolism, cytoskeletal function, and Ca²⁺-homeostasis (Gleason et al., 2003; Soderling, 2000; Hudmon and Schulman, 2002). Phosphorylation of Thr²⁸⁶ on the kinase produces an autonomously active form of CaM Kinase II (Meng et al., 2003; Picciotto et al., 1993). Autophosphorylation of Thr³⁰⁵ inhibits the activity CaM Kinase II. Phosphorylation at this site appears to reduce the association of CaM Kinase II with the PSD and reduce LTP and learning (Elgersma et al., 2002).

Anti-Phospho Thr²⁸⁶ CaM Kinase II



Western blot of rat brain lysate showing specific immunolabeling of the ~50k α- and the ~60k β- CaM Kinase II phosphorylated at Thr²⁸⁶ (Control). The phosphospecificity of this labeling is shown in the second lane (*lambda*-phosphatase: λ-Ptase). The blot is identical to the control except that it was incubated in λ-Ptase (1200 units for 30 min) before being exposed to the Anti-Thr²⁸⁶ CaM Kinase II. The immunolabeling is completely eliminated by treatment with λ-Ptase.

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WB = Western Blot **IF** = Immunofluorescence **IHC** = Immunohistochemistry **IP** = Immunoprecipitation

Packaging: 100 µl in 10 mM HEPES (pH 7.5), 150 mM NaCl, 100 µg BSA per ml and 50% glycerol. Adequate amount of material to conduct 10-mini Western Blots.

Storage and Stability. For long term storage -20°C is recommended. Stable at -20°C for at least 1 year.

Shipment: Domestic - Blue Ice; International - Blue Ice or Dry Ice.

Purification Method: Prepared from rabbit serum by affinity purification via sequential chromatography on phospho- and dephosphopeptide affinity columns.

Antibody Specificity: Specific for the ~50k α -CaM Kinase II and the ~60k β -CaM Kinase II proteins phosphorylated at Thr²⁸⁶. Immunolabeling is blocked by the λ -phosphatase treatment.

Quality Control Tests: Western blots performed on each lot.

References:

- Elgersma Y, Fedorov NB, Ikonen S, Choi ES, Elgersma M, Carvalho OM, Giese KP, Silva AJ (2002) Inhibitory autophosphorylation of CaMKII controls PSD association, plasticity, and learning. *Neuron* 36:493-505.
- Gleason MR, Higashijima S, Dallman J, Liu K, Mandel G, Fetcho JR (2003) Translocation of CaM kinase II to synaptic sites *in vivo*. *Nature Neurosci* 6:217-218.
- Hudmon A, Schulman H (2002) Neuronal Ca²⁺/calmodulin-dependent protein kinase II: The role of structure and autoregulation in cellular function. *Annu Rev Biochem* 71:473-510.
- Kennedy MB (1998) Signal transduction molecules at the glutamatergic postsynaptic membrane. *Brain Res Rev* 26:243-257.
- Meng FJ, Guo J, Zhang QG, Song B, Zhang GY (2003) Autophosphorylated calcium/calmodulin-dependent protein kinase IIa (CaMKIIa) reversibly targets to and phosphorylates N-methyl-D-aspartate receptor subunit 2B (NR2B) in cerebral ischemia and reperfusion in hippocampus of rats. *Brain Res* 967:161-169.
- Piccioito MR, Czernik AJ, Nairn AC (1993) Calcium/calmodulin-dependent protein kinase I. cDNA cloning and identification of autophosphorylation site. *J Biol Chem* 268:26512-26521.
- Schulman H, Hanson PI (1993) Multifunctional Ca²⁺/calmodulin-dependent protein kinase. *Neurochem Res* 18:65-77.
- Soderling TR (2000) CaM-kinases: modulators of synaptic plasticity. *Curr Opin Neurobiol* 10:375-380.

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