Human/Mouse/Rat/Bovine/Chicken/*Xenopus* Phospho-CaM Kinase II (T305) Antibody

Antigen Affinity-purified Polyclonal Rabbit Serum

Catalog Number: PPS003

DESCRIPTION

Species Reactivity	Human/Mouse/Rat/Bovine/Chicken/*Xenopus*
Specificity	Human, mouse, rat, bovine, chicken, Xenopus ~50 kDa α-CaM Kinase II and the ~60 kDa β-CaM Kinase II phosphorylated at T305 in Western blots.
Source	Polyclonal Rabbit Serum
Purification	Antigen Affinity-purified
Immunogen	Phosphopeptide corresponding to amino acid residues surrounding phospho-T305 of CaM Kinase II
Formulation	100 µL of unpurified neat rabbit serum. See Certificate of Analysis for details.

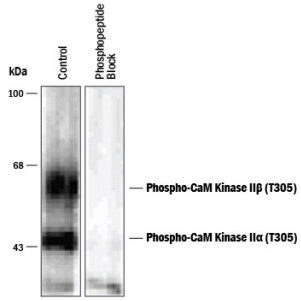
APPLICATIONS

Please Note: *Optimal dilutions should be determined by each laboratory for each application. General Protocols are available in the Technical Information section on our website.*

	Recommended Concentration	Sample
Western Blot	1:1000 dilution	See Below

DATA

Western Blot



Detection of Phospho-CaM Kinase II (T286)by Western Blot. Western blot of 10 µg of rat brain tissue lysate showing specific immunolabeling of α- and β-CaM Kinase II subunits phosphorylated at T305. The labeling by the antibody to CaM Kinase II (T305) is specifically blocked by the T305 phosphopeptide used as antigen. The corresponding non-phosphopeptide did not block the immunolabeling (not shown).

PREPARATION AND STORAGE

Shipping	The product is shipped with polar packs. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	For long-term storage, ≤ -20° C is recommended. Product is stable at ≤ -20° C for at least 1 year.

BACKGROUND

Calmodulin Kinase II (CaMKII) is a 500 kDa, 8-12 subunit multimer that belongs to the Ser/Thr protein kinase family. It is ubiquitously expressed and interacts with a very diverse group of substrates. In rat, there are four possible subunits/isozymes (α, β, γ, δ) that vary from 480-540 amino acids in length. The α- and β-isozymes predominate in the brain. Each subunit contains a catalytic, autoregulatory, and subunit-association domain. The enzyme complex is inactive, due to the association of an internal pseudosubstrate motif with each subunit's catalytic domain. CaMKII is regulated by calmodulin (CaM), an intracellular receptor for calcium. Following an influx of calcium, two Ca^{++}-CaM complexes interact with inactive CaMKII at the autoregulatory site of two adjacent CaMKII subunits. This dissociates the catalytic site from the pseudosubstrate motif, allowing for the auto(cross)-phosphorylation of T286 on one α-subunit (T287 on a β-subunit) by the catalytic site on an adjacent subunit. The T286 phosphorylation event blocks a reassociation of the catalytic domain with the internal pseudosubstrate motif, resulting in prolonged activation. Once activated, an autoinhibitory program ensues. The dissociation of Ca^{++}-CaM from CaMKII exposes a threonine at position 305. CaMKII autophosphorylation of threonine at this site downregulates existing CaMKII activity.

References:

1. Griffith, L.C. (2004) J. Neurosci. **24**:8391.
2. Hudmon, A. and H. Schulman (2002) Annu. Rev. Biochem. **71**:473.
3. Lin, C.R. *et al.* (1987) Proc. Natl. Acad. Sci. USA **84**:5962.
4. Thiel, G. *et al.* (1988) Proc. Natl. Acad. Sci. USA **85**:6337.
5. Elgersma, Y. *et al.* (2002) Neuron **36**:493.

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