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CaM Kinase II Alpha [pT286] Rabbit Polyclonal Antibody

Store at 2°C to 8°C (short-term), or –20°C (long-term)

Catalog Number: 44-674G

Pub. No. MAN0005512 **Rev.** 1.00

Clonality: Polyclonal
Quantity: 10 mini-blot size
Volume: 100 µL
Host/Class: Rabbit IgG
Reactivity: Human CaMKIIα [pT286]
Predicted Reactivity: Human, Rat, Mouse

Product description

Calcium/calmodulin-dependent protein kinase II α (CaMKIIα) is a member of the CaMKII family of serine-threonine kinases that transduce Ca2+ signals to target proteins, including ion channels and transcription activators. CaMKII plays an important role in neuronal plasticity and memory formation, and exerts both calcium-calmodulin-dependent and -independent activities. CaMKII is predominantly expressed as α and β isoforms in the brain. Autophosphorylation of CaMKIIα on threonine 286 allows the kinase to switch from a calmodulin-dependent to a calmodulin-independent state, and is required for various cellular functions including hippocampal long-term potentiation (LTP), special learning, and hippocampus-dependent memory.

Product specifications

Immunogen:	A chemically synthesized phosphopeptide derived from the region of human CaMKIIα containing threonine 286
Purification:	Antibody negatively preadsorbed using a non-phosphopeptide then purified by epitope-specific affinity chromatography
Apparent MW:	50 kDa
Sequence Identity:	Human
Sequence Homology:	Rat, Mouse
Lot:	See product label

Product applications

The antibody has been used in western blotting (1:1000 dilution). Other applications may work but have not been tested.

Because conditions may vary, it is recommended that each investigator determine the optimal amount of antibody to be used for each application.

Storage and handling

Store the antibody at 2°C to 8°C for up to 1 week, or apportion into working aliquots and keep at –20°C for long-term storage. Avoid repeated freezing and thawing.

Stability

When stored as instructed, expires one year from date of receipt unless otherwise indicated on the Certificate of Analysis.

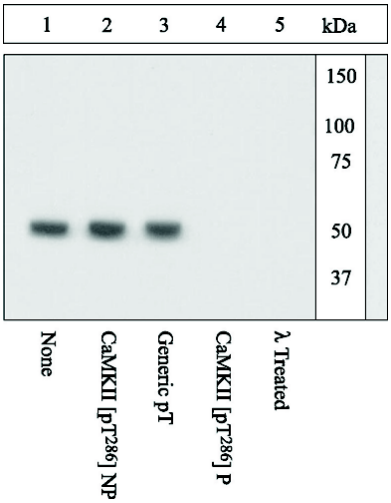

Figure 1 Peptide Competition and Phosphatase Treatment.

Rat brain lysates were resolved on a 10% Tris-glycine gel and transferred to PVDF. Membranes were either left untreated (lanes 1–4), or treated with λ phosphatase (lane 5) and blocked with 5% BSA-TBST for one hour at room temperature, then incubated with the CaMKIIα [pT286] antibody for 2 hrs at room temperature in 3% BSA-TBST, following prior incubation with: no peptide (lanes 1, 5), a non-phosphorylated peptide corresponding to the immunogen (lane 2), a generic phosphothreonine-containing peptide (lane 3), or the phosphopeptide immunogen (lane 4). The blots were developed using chemiluminescence (ECL) method with a goat $F(ab')_2$ anti-rabbit IgG HRP conjugate (Cat. no. ALI4404).

Only the phosphopeptide corresponding to CaMKIIα [pT286] blocks the antibody signal (lane 4) demonstrating the specificity of the antibody. The data also show that that the antibody is phospho-specific as phosphatase treatement eliminates the signal (lane 5).

Positive controls used

Rat or mouse brain lysates.

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Storage buffer

Dulbecco's phosphate buffered saline (without Mg^{2+} and Ca^{2+}), pH 7.3 (+/– 0.1), 50% glycerol with 1.0 mg/mL BSA (IgG, protease free) as a carrier, and 0.05% sodium azide.

CAUTION! Sodium azide is extremely toxic and may react with lead and copper plumbing to form highly explosive metal azides. Properly dispose of solutions containing sodium azide. Read the Safety Data Sheet (SDS) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. SDSs are available at **www.lifetechnologies.com/support**.

References

1. Weeber, E.J., et al. (2003) Derangements of hippocampal calcium/calmodulin-dependent protein kinase II in a mouse model for Angelman mental retardation syndrome. *J. Neurosci.* 23(7):2634-2644.
2. Beauman, S.R., et al. (2003) CyclinB1 expression is elevated and mitosis is delayed in HeLa cells expressing autonomous CaMKII. *Cell Signal*. 15(11):1049-1057.
3. Chin, D. and A.R. Means (2002) Mechanisms for regulation of calmodulin kinase IIalpha by Ca2+/calmodulin and autophosphorylation of threonine 286. *Biochemistry*. 41(47):14001-14009.
4. Huang, C.C., et al. (2001) Characterization of the mechanism underlying the reversal of long term potentiation by low frequency stimulation at hippocampal CA1 synapses. *J. Biol. Chem*. 276(51):48108-48117.
5. Kim, S.A., et al. (2001) CaM-kinase II dephosphorylates Thr(286) by a reversal of the autophosphorylation reaction. *Biochem. Biophys. Res. Commun*. 282(3):773-780.
6. Bennecib, M., et al. (2001) Inhibition of PP-2A upregulates CaMKII in rat forebrain and induces hyperphosphorylation of tau at Ser 262/356. *FEBS Lett*. 490(1-2):15-22.
7. Giese, K.P., et al. (1998) Autophosphorylation at Thr286 of the alpha calcium-calmodulin kinase II in LTP and learning. *Science*. 279(5352):870-873.
8. Cho, Y.H., et al. (1998) Abnormal hippocampal spatial representations in alphaCaMKIIT286A and CREBalphaDelta- mice. *Science*. 279(5352):867-869.

Related products

Product Name	Quantity	Cat. No.
c-Raf [pS259] Rabbit Polyclonal Antibody	10 blots	44502
c-Raf [pSpY338/340] Rabbit Polyclonal Antibody	10 blots	44505G
c-Raf [pYpY340/341] Rabbit Polyclonal Antibody	10 blots	44506G
PKA-alpha/beta [pT197] Rabbit Polyclonal Antibody	10 blots	44988
ERK1/2 [pTpY185/187] Polyclonal Antibody, Rabbit	10 blots	44680G
Tau [pS262] Polyclonal Antibody, Rabbit	10 blots	44750G
Tau [pS356] Polyclonal Antibody, Rabbit	10 blots	44751G
CREB [pS133] Human ELISA Kit	10 blots	KHO0241

Product documentation

To obtain a Certificate of Analysis or Safety Data Sheets (SDSs), visit **www.lifetechnologies.com/support.**

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Explanation of symbols

Symbol	Description	Symbol	Description	Symbol	Description
	Manufacturer		Catalog number		Batch code
	Use by		Temperature limitation		
	Consult instructions for use		Caution, consult accompanying documents		

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