

# Product Information



## CaMKII Monoclonal Antibody (Clone 6G9)

Catalog No. 10011437

<b>Contents:</b>	This vial contains protein G-purified mouse IgG at a concentration of 1 mg/ml in PBS, pH. 7.4, containing 50% glycerol and 0.09% sodium azide.
<b>Synonym:</b>	Calcium/Calmodulin-dependent Protein Kinase II
<b>Antigen:</b>	Rat recombinant CaMKII
<b>Host:</b>	Mouse, clone 6G9
<b>Isotype:</b>	IgG <sub>1</sub>
<b>Cross Reactivity:</b>	(+) murine, rat, and bovine CaMKII. Detects ~50-60 kDa protein, corresponding to the apparent molecular mass of CaMKII $\alpha$ -subunit on SDS-PAGE immunoblots. Both the phosphorylated and non-phosphorylated forms are recognized.
<b>Stability:</b>	$\geq 1$ year at $-20^{\circ}\text{C}$
<b>Applications:</b>	Immunofluorescence, immunoprecipitation, western blot (WB), immunohistochemistry, and EIA. The recommended starting concentration for WB is 0.1 $\mu\text{g/ml}$ ; 0.1 $\mu\text{g/ml}$ of CaMKII antibody was needed for detection of CaMKII in 20 $\mu\text{g}$ of rat brain tissue. Optimal working dilutions for other applications should be determined empirically.

CaMKII is an important member of the calcium/calmodulin-activated protein kinase family, functioning in neural synaptic stimulation and T-cell receptor signaling.<sup>1,2</sup> CaMKII is expressed in many different tissues but is specifically found in 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.<sup>3-7</sup> The binding of  $\text{Ca}^{2+}$ /calmodulin to its regulatory domain releases its auto inhibitory effect and activates the kinase.<sup>8</sup> This kinase activation results in autophosphorylation at threonine 286 (Thr<sup>286</sup>).<sup>8</sup>

The threonine phosphorylation state of CaMKII can be regulated through protein phosphatase 1 (PP1)/protein kinase A (PKA). Whereas PP1 dephosphorylates phospho-CaMKII at Thr<sup>286</sup>, PKA prevents this dephosphorylation.<sup>9</sup> Autophosphorylation also enables CaMKII to attain an enhanced affinity for NMDA receptors in postsynaptic densities.<sup>10-12</sup>

### References

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### Related Product

CaMKII (phospho-Thr<sup>286</sup>/Thr<sup>287</sup>) Monoclonal Antibody (Clone 22B1) - Cat. No. 10011438

**WARNING: THIS PRODUCT IS NOT FOR HUMAN OR ANIMAL DISEASE DIAGNOSIS OR THERAPEUTIC DRUG USE.**

#### MATERIAL SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Material Safety Data Sheet, which has been sent under separate cover to the MSDS supervisor at your institution.

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