

#8084 Store at -20°C

# Phospho-AMPA Receptor 1 (GluA1) (Ser845) (D10G5) Rabbit mAb



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Applications W, IP Endogenous	Species Cross-Reactivity* H, M, R	Molecular Wt. 100 kDa	Isotype Rabbit IgG**
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**Background:** AMPA- ( $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid), kainite- and NMDA- (N-methyl-D-aspartate) receptors are the three main families of ionotropic glutamate-gated ion channels. AMPA receptors (AMPA receptors) are comprised of four subunits (GluR 1-4), which assemble as homo- or hetero-tetramers to mediate the majority of fast excitatory transmissions in the CNS. AMPARs are implicated in synapse formation, stabilization, and plasticity (1). AMPARs that lack GluR 2 are permeable to calcium, in contrast to GluR 2 containing AMPARs (2). Post-transcriptional modifications (alternative splicing, nuclear RNA editing) and post-translational modifications (glycosylation, phosphorylation) result in a very large number of permutations, fine-tuning the kinetic properties of AMPARs. Activity changes of AMPARs are implicated in a variety of diseases including Alzheimer's, amyotrophic lateral sclerosis (ALS), stroke, and epilepsy (1).

The activation of PKA regulates the activity of AMPA-type glutamate receptors by phosphorylation of the subunit GluR 1 at Ser845. Furthermore, Ser845 phosphorylation is increased by activation of D1-type dopamine receptors and by inhibition of protein phosphatase 1/protein phosphatase 2A (3,4). Phosphorylation at either Ser831 or Ser845 potentiates AMPA receptor ion channel function: long-term potentiation (LTP) correlates with increased phosphorylation, while long-term depression (LTD) correlates with a dephosphorylation of GluR 1 (5). Phosphomutant mice (Ser831Ala and Ser845Ala) show deficits in LTD and LTP. Either Ser831 or Ser845 alone may support LTP, while only Ser845 is critical for LTD. Furthermore, these mice have memory deficiencies in spatial learning tasks (6,7). Assembly of the  $\beta$ 2-adrenergic receptor, trimeric Gs protein, adenylyl cyclase, PKA, GluR 1, stargazin, and PSD95 signaling complex for localized cAMP signaling is dependent on phosphorylation of GluR 1 at Ser845 (8).

**Specificity/Sensitivity:** Phospho-AMPA Receptor 1 (GluA1) (Ser845) (D10G5) Rabbit mAb recognizes endogenous levels of AMPA Receptor 1 (GluA1) protein only when phosphorylated at Ser845. While the literature refers to this residue as Ser845, it is Ser863 in the UniProt sequence P4226.

**Source/Purification:** Monoclonal antibody is produced by immunizing animals with a synthetic phosphopeptide corresponding to residues surrounding Ser845 of human AMPA Receptor 1 (GluA1) protein.

- Background References:**
- (1) Palmer, C.L. et al. (2005) *Pharmacol Rev* 57, 253-77.
  - (2) Cull-Candy, S. et al. (2006) *Curr Opin Neurobiol* 16, 288-97.
  - (3) Roche, K.W. et al. (1996) *Neuron* 16, 1179-88.
  - (4) Snyder, G.L. et al. (2000) *J Neurosci* 20, 4480-8.
  - (5) Lee, H.K. et al. (2000) *Nature* 405, 955-9.
  - (6) Lee, H.K. et al. (2003) *Cell* 112, 631-43.
  - (7) He, K. et al. (2009) *Proc Natl Acad Sci USA* 106, 20033-8.
  - (8) Joiner, M.L. et al. (2010) *EMBO J* 29, 482-95.

Entrez-Gene ID #2890  
Swiss-Prot Acc. #P42261

**Storage:** Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100  $\mu$ g/ml BSA, 50% glycerol and less than 0.02% sodium azide. Store at -20°C. Do not aliquot the antibody.

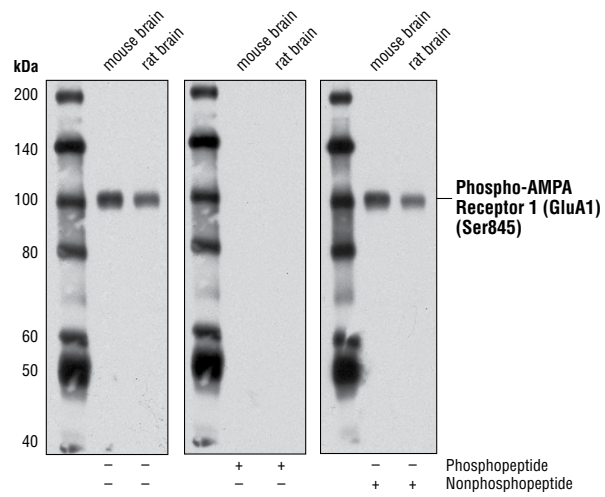
\*Species cross-reactivity is determined by western blot.  
\*\*Anti-rabbit secondary antibodies must be used to detect this antibody.

**Recommended Antibody Dilutions:**

Western blotting	1:1000
Immunoprecipitation	1:50

For application specific protocols please see the web page for this product at [www.cellsignal.com](http://www.cellsignal.com).

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Western blot analysis of extracts from mouse brain and rat brain using Phospho-AMPA Receptor 1 (GluA1) (Ser845) (D10G5) Rabbit mAb. The phospho-specificity of the antibody was verified by blocking with a phospho or nonphosphopeptide.

**IMPORTANT:** For western blots, incubate membrane with diluted antibody in 5% w/v BSA, 1X TBS, 0.1% Tween-20 at 4°C with gentle shaking, overnight.

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**Applications Key:** W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E-P—ELISA-Peptide  
**Species Cross-Reactivity Key:** H—human M—mouse R—rat Hm—hamster Mk—monkey Mi—mink C—chicken Dm—D. melanogaster X—Xenopus Z—zebrafish B—bovine  
 Dg—dog Pg—pig Sc—S. cerevisiae Ce—C. elegans Hr—horse AI—all species expected Species enclosed in parentheses are predicted to react based on 100% homology.