

Store at
-20°C
#75574

Phospho-AMPA Receptor 1 (GluA1) (Ser831) (A502P) Rabbit mAb



Support: +1-978-867-2388 (U.S.)
www.cellsignal.com/support

Orders: 877-616-2355 (U.S.)
orders@cellsignal.com

Entrez-Gene ID #2890
UniProt ID #P42261

rev. 10/20/17

For Research Use Only. Not For Use In Diagnostic Procedures.

Applications W, IP Endogenous	Species Cross-Reactivity* H, M, (R)	Molecular Wt. 100 kDa	Isotype Rabbit IgG**
-------------------------------------	--	--------------------------	-------------------------

Background: AMPA- (α -amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid), kainate-, and NMDA- (N-methyl-D-aspartate) receptors are the three main families of ionotropic glutamate-gated ion channels. AMPA receptors (AMPARs) 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 central nervous system. AMPARs are implicated in synapse formation, stabilization, and plasticity (1). In contrast to GluR 2-containing AMPARs, AMPARs that lack GluR 2 are permeable to calcium (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. Research studies have implicated activity changes in AMPARs in a variety of diseases including Alzheimer's, amyotrophic lateral sclerosis (ALS), stroke, and epilepsy (1).

AMPA-type glutamate receptor activity is regulated by phosphorylation, which plays an important role in synaptic plasticity. CaMKII and PKC phosphorylate GluR 1 at Ser831, while PKA phosphorylates GluR 1 at Ser845 (3-5). Furthermore, Ser845 phosphorylation is increased by activation of D1-type dopamine receptors and by inhibition of protein phosphatase 1/protein phosphatase 2A (5,6). 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 (6). 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 (7,8). GluR 1 receptors are phosphorylated at either Ser831 or Ser845 at ~15-20% under basal conditions and ~50% under stimulated conditions (behavioral or pharmacological) (9).

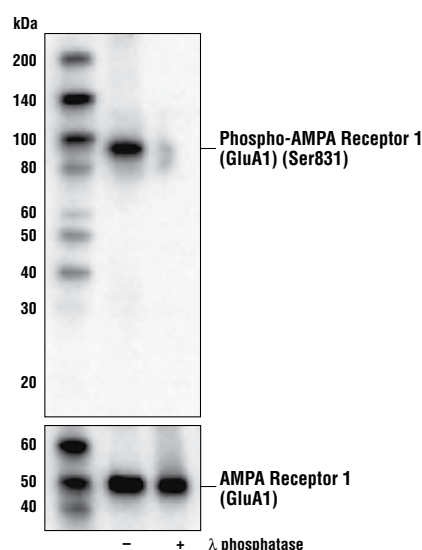
Background References:

- (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) Mammen, A.L. et al. (1997) *J Biol Chem* 272, 32528-33.
- (4) Barria, A. et al. (1997) *J Biol Chem* 272, 32727-30.

- (5) Roche, K.W. et al. (1996) *Neuron* 16, 1179-88.
- (6) Lee, H.K. et al. (2000) *Nature* 405, 955-9.
- (7) Lee, H.K. et al. (2003) *Cell* 112, 631-43.
- (8) He, K. et al. (2009) *Proc Natl Acad Sci U S A* 106, 20033-8.
- (9) Diering, G.H. et al. (2016) *Proc Natl Acad Sci U S A* 113, E4920-7.

Specificity/Sensitivity: Phospho-AMPA Receptor 1 (GluA1) (Ser831) (A502P) Rabbit mAb recognizes endogenous levels of AMPA Receptor 1 (GluA1) protein only when phosphorylated Ser831. While the literature refers to this residue as Ser831, it is Ser849 in the UniProt sequence P42261.

Source/Purification: Monoclonal antibody is produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Ser831 of human AMPA Receptor 1 (GluA1) protein.



Western blot analysis of extracts from mouse brain, untreated (-) or λ -phosphatase-treated (+), using Phospho-AMPA Receptor 1 (GluA1) (Ser831) (A502P) Rabbit mAb (upper) and AMPA Receptor 1 (GluA1) (D4N9V) Rabbit mAb #13185 (lower).

Storage: Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 μ 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 product specific protocols and a complete listing of recommended companion products please see the product web page at www.cellsignal.com

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

Tween is a registered trademark of ICI Americas, Inc.

Thank you for your recent purchase. If you would like to provide a review visit cellsignal.com/comments.

www.cellsignal.com

© 2017 Cell Signaling Technology, Inc.

Cell Signaling Technology is a trademark of Cell Signaling Technology, Inc.

Applications: W—Western IP—Immunoprecipitation IHC—Immunohistochemistry ChIP—Chromatin Immunoprecipitation IF—Immunofluorescence F—Flow cytometry E-P—ELISA-Peptide **Species Cross-Reactivity:** 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 All—all species expected **Species** enclosed in parentheses are predicted to react based on 100% homology.