Revision 4

NMDA Receptor 2A (GluN2A) Antibody

#4205 Store at -20C

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Applications:	Reactivity:	Sensitivity:	MW (kDa):	Source/Isotype:	UniProt ID:	Entrez-Gene Id:
W, W-S	M R	Endogenous	180	Rabbit	#Q12879	2903

Product Usage Information

Application	Dilution
Western Blotting	1:1000
Simple Western™	1:10 - 1:50

Storage

Supplied in 10 mM sodium HEPES (pH 7.5), 150 mM NaCl, 100 µg/ml BSA and 50% glycerol. Store at –20°C. Do not aliquot the antibody.

Specificity/Sensitivity

NMDA Receptor 2A (GluN2A) Antibody detects endogenous levels of total NMDAR2A protein. This antibody cross-reacts with an unidentified protein at ~70kDa.

Species predicted to react based on 100% sequence homology

Human

Source / Purification

Polyclonal antibodies are produced by immunizing animals with a synthetic peptide corresponding to residues surrounding Asn1174 of human NMDAR2A. Antibodies are purified peptide affinity chromatography.

Background

N-methyl-D-aspartate receptor (NMDAR) forms a heterodimer of at least one NR1 and one NR2A-D subunit. Multiple receptor isoforms with distinct brain distributions and functional properties arise by selective splicing of the NR1 transcripts and differential expression of the NR2 subunits. NR1 subunits bind the co-agonist glycine and NR2 subunits bind the neurotransmitter glutamate. Activation of the NMDA receptor or opening of the ion channel allows flow of Na^+ and Ca^{2+} ions into the cell, and K^+ out of the cell (1). Each subunit has a cytoplasmic domain that can be directly modified by the protein kinase/phosphatase (2). PKC can phosphorylate the NR1 subunit (NMDAR1) of the receptor at Ser890/Ser896, and PKA can phosphorylate NR1 at Ser897 (3). The phosphorylation of NR1 by PKC decreases its affinity for calmodulin, thus preventing the inhibitory effect of calmodulin on NMDAR (4). The phosphorylation of NR1 by PKA probably counteracts the inhibitory effect of calcineurin on the receptor (5). NMDAR mediates long-term potentiation and slow postsynaptic excitation, which play central roles in learning, neurodevelopment, and neuroplasticity (6).

Background References

1. Liu, X.B. et al. (2004) *J Neurosci* 24, 8885-95.
2. Westphal, R.S. et al. (1999) *Science* 285, 93-6.
3. Tingley, W.G. et al. (1997) *J Biol Chem* 272, 5157-66.
4. Hisatsune, C. et al. (1997) *J Biol Chem* 272, 20805-10.
5. Raman, I.M. et al. (1996) *Neuron* 16, 415-21.
6. Makhinson, M. et al. (1999) *J Neurosci* 19, 2500-10.

Species Reactivity

Species reactivity is determined by testing in at least one approved application (e.g., western blot).

Western Blot Buffer

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

Applications Key

W: Western Blotting **W-S:** Simple Western™

Cross-Reactivity Key

M: Mouse **R:** Rat

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