

Anti-NMDA Receptor, NR2A Subunit Antibody



PhosphoSolutions®
Antibodies that work™

Catalog #: 1495-NR2A

Size: 100 µl

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Host	Applications	Species Tested	Species Reactivity*	Molecular Reference
Rabbit	WB 1:1000 IHC 1:1000 (frozen sections) IP 3 µl per 200 µg lysate	M, H, R		~180 kDa

Product Description: Affinity purified rabbit polyclonal antibody.

Biological Significance: The ion channels activated by glutamate are typically divided into two classes. Glutamate receptors that are activated by kainate and α -amino-3-hydroxy-5-methyl-4-isoxalone propionic acid (AMPA) are known as kainate/AMPA receptors (K/AMPA). Those that are sensitive to N-methyl-D-aspartate (NMDA) are designated NMDA receptors (NMDAR). The NMDAR plays an essential role in memory, neuronal development and it has also been implicated in several disorders of the central nervous system including Alzheimer's, epilepsy and ischemic neuronal cell death (Grosshans et al., 2002; Wenthold et al., 2003; Carroll and Zukin, 2002). The NMDA receptor is also one of the principal molecular targets for alcohol in the CNS (Lovinger et al., 1989; Alvestad et al., 2003; Snell et al., 1996). The NMDAR is also potentiated by protein phosphorylation (Lu et al., 1999). The rat NMDAR1 (NR1) was the first subunit of the NMDAR to be cloned. The NR1 protein can form NMDA activated channels when expressed in *Xenopus* oocytes but the currents in such channels are much smaller than those seen *in situ*. Channels with more physiological characteristics are produced when the NR1 subunit is combined with one or more of the NMDAR2 (NR2 A-D) subunits.

Antigen: Fusion protein from the C-terminus of the NR2A subunit of rat NMDA receptor.

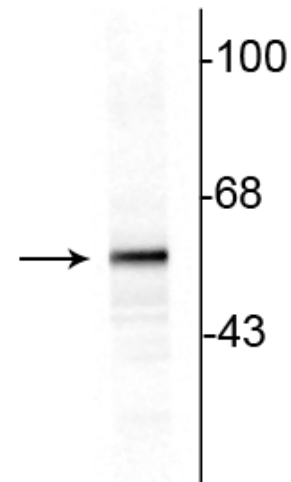
Antibody Specificity: Specific for endogenous levels of the ~180 kDa NR2A subunit of the NMDA receptor. No reactivity towards the NR2B and NR2C subunits. Immunolabeling is blocked by pre-adsorption of antibody with the fusion protein used to generate the antibody.

Purification Method: Prepared from pooled rabbit serum using a column to which the fusion protein immunogen was coupled.

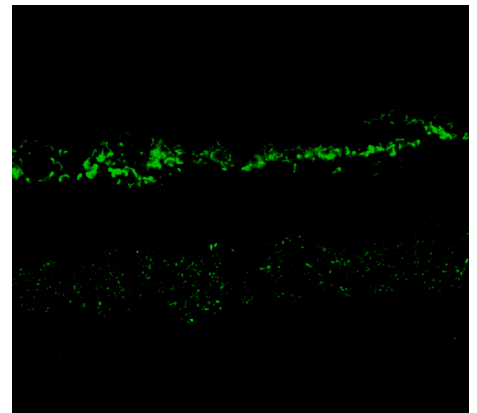
Quality Control Tests: Western blots performed on each lot.

Packaging: 100 µl in 10 mM HEPES (pH 7.5), 150 mM NaCl, 100 µg BSA per ml and 50% glycerol.

Storage and Stability: Shipped on blue ice. Storage at -20°C is recommended, as aliquots may be taken without freeze/thawing due to presence of 50% glycerol. Stable for at least 1 year at -20°C.



Western blot of 10 µg of rat hippocampal lysate showing specific immunolabeling of the ~180 kDa NR2A subunit of the NMDA receptor.



Immunostaining of rabbit retina showing NR2A (green) in the rod and cone photoreceptors in the outer plexiform layer as well as the entire inner plexiform layer.

Product Specific References:

Hicklin TR, Wu PH, Radcliffe RA, Freund RK, Goebel-Goody SM, Correra PR, Proctor WR, Lombroso PJ, and Browning MD. (2011) Alcohol inhibition of the NMDA receptor function, long-term potentiation, and fear learning requires striatal-enriched protein tyrosine phosphatase. *Proc Natl Acad Sci USA* 108(16):6650-5.

Alvestad RM, Grosshans DR, Coultrap SJ, Nakazawa T, Yamamoto T, Browning MD (2003) Tyrosine dephosphorylation and ethanol inhibition of *N*-methyl-D-aspartate receptor function. *J Biol Chem* 278:11020-11025.

Wenthold RJ, Prybylowski K, Standley S, Sans N, Petralia RS (2003) Trafficking of NMDA receptors. *Annu Rev Pharmacol Toxicol* 43:335-358.

Grosshans DR, Clayton DA, Coultrap SJ, Browning MD (2002) LTP leads to rapid surface expression of NMDA but not AMPA receptors in adult rat CA1. *Nat Neurosci* 5:27-33.

General References:

Carroll RC, Zukin RS (2002) NMDA-receptor trafficking and targeting: implications for synaptic transmission and plasticity. *Trends Neurosci* 25:571-577.

Lu W-Y, Xiong Z-G, Lei S, Orser BA, Browning MD, MacDonald JF (1999) G-protein coupled receptors act via protein kinase C and Src to regulate NMDA receptors. *Nature Neurosci* 2:331-338.

Snell LD, Nunley KR, Lickteig RL, Browning MD, Tabakoff B, Hoffman PL (1996) Regional and subunit specific changes in NMDA receptor mRNA and immunoreactivity in mouse brain following chronic ethanol ingestion. *Mol Brain Res Mol Brain Res* 40(1):71-8.

Lovinger DM, White G, Weight FF (1989) Ethanol inhibits NMDA-activated ion current in hippocampal neurons. *Science* 243:1721-1724.

Note: Dr. Michael Browning, a co-author of four of the cited papers, is President and founder of PhosphoSolutions.