Anti-Phospho-Tyr^{1325} NMDA NR2A-Subunit

Catalog Number: SY-p1514-1325 **Size:** 100 µl $375.00

Product Description: Affinity purified rabbit polyclonal antibody

Applications: **WB**: 1:1000

Antigen: Phosphopeptide corresponding to amino acid residues surrounding the phospho-Tyr^{1325} of rat NMDA NR2A.

Species reactivity: The antibody has been directly tested for reactivity in Western blots with mouse and rat tissues. It is anticipated that the antibody will react with bovine and canine based on the fact that these species have 100% homology with the amino acid sequence used as antigen.

Biological Significance: The ion channels activated by glutamate 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). Channels with physiological characteristics are produced when the NR1 subunit is combined with one or more of the NMDAR2 (NR2 A-D) subunits (Ishii et al., 1993). Recently, phosphorylation of Tyrosine 1325 of the NR2A subunit has been shown to be increased in human brain tissue sections from HIV-infected individuals with encephalitis (King et al., 2010). In addition, Tyr^{1325} phosphorylation has been linked with depression-related behavior (Taniguchi et al., 2009).

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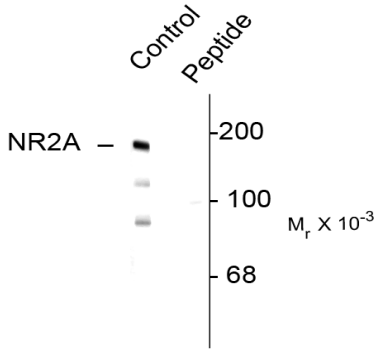

Western blot of rat hippocampal lysate showing specific immunolabeling of the ~180k NR2A subunit of the NMDAR phosphorylated at Tyr^{1325} (Control). The phosphospecificity of this labeling is shown in the second lane where immunoreactivity is blocked by preadsorption with the phospho-peptide (Peptide) used as antigen but not by the dephosphopeptide (not shown).

WB = Western Blot **IF** = Immunofluorescence **IHC** = Immunohistochemistry **IP** = Immunoprecipitation
Packaging: 100 µl in 10 mM HEPES (pH 7.5), 150 mM NaCl, 100 µg per ml BSA and 50% glycerol. Adequate amount of material to conduct 10-mini Western Blots.
Storage and Stability: Store at –20°C in undiluted aliquots; stable for at least one year after date of receipt. Avoid freeze/thaw cycles.
Shipment: Domestic - Blue Ice; International - Dry Ice.
For Research Use Only.

Purification Method: Prepared from rabbit serum by affinity purification via sequential chromatography on phospho- and dephosphopeptide affinity columns.

Antibody Specificity: Specific for the ~180k NMDAR NR2A-subunit protein phosphorylated at Tyr^{1325} in Western blots. Immunolabeling is completely blocked by blocked by the phosphopeptide used as the antigen but not by the corresponding dephosphopeptide.

Quality Control Tests: Western blots performed on each lot.

References:

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.

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

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.

Ishii T, Moriyoshi K, Sugihara H, Sakurada K, Kadotani H, Yokoi M, Akazawa C, Shigemoto R, Mizuno N, Masu M, Nakanishi S (1993) Molecular characterization of the family of the N-methyl- D-aspartate receptor subunits. J Biol Chem 268:2836-2843.

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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 40:71-78.

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

King JE, Eugenin EA, Hazleton JE, Morgello S, Berman JW (2010) Mechanisms of HIV-tat-induced phosphorylation of N-methyl-D-aspartate receptor subunit 2A in human primary neurons: implications for neuroAIDS pathogenesis. Am J Pathol. 176(6):2819-30.

Taniguchi S, Nakazawa T, Tanimura A, Kiyama Y, Tezuka T, Watabe AM, Katayama N, Yokoyama K, Inoue T, Izumi-Nakaseko H, Kakuta S, Sudo K, Iwakura Y, Umemori H, Inoue T, Murphy NP, Hashimoto K, Kano M, Manabe T, Yamamoto T. (2009) Involvement of NMDAR2A tyrosine phosphorylation in depression-related behaviour. EMBO J. 28(23):3717-29.

Note: Dr. Michael Browning, an author of three of the cited papers, is President and founder of PhosphoSolutions.

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