PhosphoSolutions®
Antibodies that work™

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Anti-GABA$_A$ Receptor, α_4-Subunit, N-Terminus

Catalog Number: 844-GA4N **Size:** 100 µl

Product Description: Affinity purified rabbit polyclonal antibody

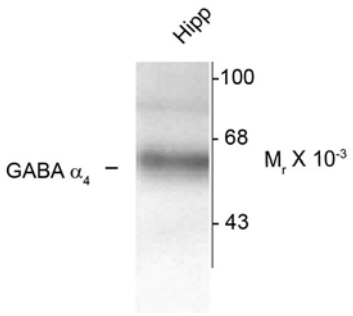
Applications: **WB**: 1:1000 **IHC**: 1:300

Antigen: Peptide from the N-terminal region of the α_4-subunit of rat GABA$_A$ receptor, conjugated to keyhole limpet hemocyanin (KLH).

Species reactivity: The antibody has been directly tested for reactivity in Western blots with rat tissue.

Biological Significance: *Gamma*-aminobutyric acid (GABA) is the primary inhibitory neurotransmitter in the central nervous system, causing a hyperpolarization of the membrane through the opening of a Cl^- channel associated with the GABA$_A$ receptor (GABA$_A$-R) subtype. GABA$_A$-Rs are important therapeutic targets for a range of sedative, anxiolytic, and hypnotic agents and are implicated in several diseases including epilepsy, anxiety, depression, and substance abuse. The GABA$_A$-R is a multimeric subunit complex. To date six αs, four βs and four γs, plus alternative splicing variants of some of these subunits, have been identified (Olsen and Tobin, 1990; Whiting et al., 1999; Ogris et al., 2004). Injection in oocytes or mammalian cell lines of cRNA coding for α- and β-subunits results in the expression of functional GABA$_A$-Rs sensitive to GABA. However, coexpression of a γ-subunit is required for benzodiazepine modulation. The various effects of the benzodiazepines in brain may also be mediated via different α-subunits of the receptor (McKernan et al., 2000; Mehta and Ticku, 1998; Ogris et al., 2004; Pöltl et al., 2003).

Anti-GABA$_A$-Receptor, α_4-Subunit



Western blot of 10 µg of rat brain hippocampus (Hipp) lysate showing immunolabeling of the ~64k α_4-subunit of the GABA$_A$-R.

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. For long term storage –20°C is recommended. Stable at –20°C for at least 1 year.
Shipment: Domestic - Blue Ice; International – Blue Ice or Dry Ice.

Purification Method: Prepared from rabbit serum by affinity purification using a column to which the peptide immunogen was coupled.

Antibody Specificity: Specific for the ~64k α_4-subunit of the $GABA_A$ receptor in Western blots of rat brain extracts.

Quality Control Tests: Western blots performed on each lot.

References:

McKernan RM, et al. (2000) Sedative but not anxiolytic properties of benzodiazepines are mediated by the $GABA_A$ receptor α_1-subtype. Nature Neurosci 3:587-592.

Mehta AK, Ticku MK (1998) Prevalence of the $GABA_A$ receptor assemblies containing α_1-subunit in the rat cerebellum and cerebral cortex as determined by immunoprecipitation: Lack of modulation by chronic ethanol administration. Mol Brain Res 67:194-199.

Ogris W, Pöltl A, Hauer B, Ernst M, Oberto A, Wulff P, Höger H, Wisden W, Sieghart W (2004) Affinity of various benzodiazepine site ligands in mice with a point mutation in the $GABA_A$ receptor γ_2-subunit. Biochem Pharmacol 68:1621-1629.

Olsen RW, Tobin AJ (1990) Molecular biology of $GABA_A$ receptors. FASEB 4:1469-1480.

Pöltl A, Hauer B, Fuchs K, Tretter V, Sieghart W (2003) Subunit composition and quantitative importance of $GABA_A$ receptor subtypes in the cerebellum of mouse and rat. J Neurochem 87:1444-1455.

Whiting PJ, Bonnert TP, McKernan RM, Farrar S, Le Bourdellès B, Heavens RP, Smith DW, Hewson L, Rigby MR, Sirinathsinghji DJS, Thompson SA, Wafford KA (1999) Molecular and functional diversity of the expanding $GABA_A$ receptor gene family. Ann NY Acad Sci 868:645-653.

Diaz MR, Christian DT, Anderson NJ, McCool BA (2011) Chronic ethanol and withdrawal differentially modulate lateral/basolateral amygdala paracapsular and local GABAergic synapses. J Pharmacol Exp Ther. 337(1): 162-70.

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