

# GABA<sub>A</sub> R $\gamma$ 2 (E-13): sc-131934

## BACKGROUND

GAD-65 and GAD-67, glutamate decarboxylases, function to catalyze the production of GABA ( $\gamma$ -aminobutyric acid). In the central nervous system, GABA functions as the main inhibitory transmitter by increasing a Cl<sup>-</sup> (chloride) conductance that inhibits neuronal firing. GABA has been shown to activate both ionotropic (GABA<sub>A</sub>) and metabotropic (GABA<sub>B</sub>) receptors, as well as a third class of receptors called GABA<sub>C</sub>. The  $\gamma$  subunit of GABA<sub>A</sub> receptors are important for benzodiazepine binding and modulation of GABA-mediated Cl<sup>-</sup> current. GABA<sub>A</sub> R $\gamma$ 2 is a 467 amino acid multi-pass membrane protein localized to the postsynaptic cell membrane. Present as a pentamer with other GABA<sub>A</sub> receptor chains ( $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  and  $\rho$ ), the GABA<sub>A</sub> ligand-gated Cl<sup>-</sup> channels selectively complex with D5DR to enable mutual inhibitory functional interactions between the two receptor systems. Defects in the gene encoding GABA<sub>A</sub> R $\gamma$ 2 have been found to be the cause of childhood absence epilepsy type 2, familial febrile convulsions type 8, generalized epilepsy with febrile seizures plus type 3 and severe myoclonic epilepsy in infancy.

## REFERENCES

- Pritchett, D.B., et al. 1989. Importance of a novel GABA<sub>A</sub> receptor subunit for benzodiazepine pharmacology. *Nature* 338: 582-585.
- Wang, H., et al. 1999. GABA<sub>A</sub>-receptor-associated protein links GABA<sub>A</sub> receptors and the cytoskeleton. *Nature* 397: 69-72.
- Kucken, A.M., et al. 2000. Identification of benzodiazepine binding site residues in the  $\gamma$ 2 subunit of the GABA<sub>A</sub> receptor. *Mol. Pharmacol.* 57: 932-939.
- Liu, F., et al. 2000. Direct protein-protein coupling enables cross-talk between dopamine D5 and GABA<sub>A</sub> receptors. *Nature* 403: 274-280.
- Baulac, S., et al. 2001. First genetic evidence of GABA<sub>A</sub> receptor dysfunction in epilepsy: a mutation in the  $\gamma$ 2 subunit gene. *Nat. Genet.* 28: 46-48.
- Kananura, C., et al. 2002. A splice-site mutation in GABRG2 associated with childhood absence epilepsy and febrile convulsions. *Arch. Neurol.* 59: 1137-1141.
- Online Mendelian Inheritance in Man, OMIM<sup>™</sup>. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 137164. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
- Kang, J.Q., et al. 2006. Why does fever trigger febrile seizures? GABA<sub>A</sub> receptor  $\gamma$ 2 subunit mutations associated with idiopathic generalized epilepsies have temperature-dependent trafficking deficiencies. *J. Neurosci.* 26: 2590-2597.

## CHROMOSOMAL LOCATION

Genetic locus: GABRG2 (human) mapping to 5q34; Gabrg2 (mouse) mapping to 11 A5.

## SOURCE

GABA<sub>A</sub> R $\gamma$ 2 (E-13) is an affinity purified goat polyclonal antibody raised against a peptide mapping within a cytoplasmic domain of GABA<sub>A</sub> R $\gamma$ 2 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-131934 P, (100  $\mu$ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

GABA<sub>A</sub> R $\gamma$ 2 (E-13) is recommended for detection of GABA<sub>A</sub> R $\gamma$ 2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); non cross-reactive with family members GABA<sub>A</sub> R $\gamma$ 1 or GABA<sub>A</sub> R $\gamma$ 3.

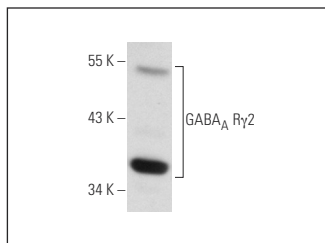
GABA<sub>A</sub> R $\gamma$ 2 (E-13) is also recommended for detection of GABA<sub>A</sub> R $\gamma$ 2 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for GABA<sub>A</sub> R $\gamma$ 2 siRNA (h): sc-42449, GABA<sub>A</sub> R $\gamma$ 2 siRNA (m): sc-42450, GABA<sub>A</sub> R $\gamma$ 2 shRNA Plasmid (h): sc-42449-SH, GABA<sub>A</sub> R $\gamma$ 2 shRNA Plasmid (m): sc-42450-SH, GABA<sub>A</sub> R $\gamma$ 2 shRNA (h) Lentiviral Particles: sc-42449-V and GABA<sub>A</sub> R $\gamma$ 2 shRNA (m) Lentiviral Particles: sc-42450-V.

Molecular Weight of GABA<sub>A</sub> R $\gamma$ 2: 54 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, mouse cerebellum extract: sc-2403 or U-87 MG cell lysate: sc-2411.

## DATA



GABA<sub>A</sub> R $\gamma$ 2 (E-13): sc-131934. Western blot analysis of GABA<sub>A</sub> R $\gamma$ 2 expression in U-87 MG whole cell lysate.

## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.