

# GAD-67 (F-6): sc-28376

## BACKGROUND

There are two forms of glutamic acid decarboxylases (GADs) that are found in the brain: GAD-65 (also known as GAD2) and GAD-67 (also known as GAD1, GAD or SCP). GAD-65 and GAD-67 are members of the group II decarboxylase family of proteins and are responsible for catalyzing the rate limiting step in the production of GABA ( $\gamma$ -aminobutyric acid) from L-glutamic acid. Although both GADs are found in the brain, GAD-65 localizes to synaptic vesicle membranes in nerve terminals, while GAD-67 is distributed throughout the cell. GAD-67 is responsible for the basal levels of GABA synthesis. In the case of a heightened demand for GABA in neurotransmission, GAD-65 will transiently activate to assist in GABA production. The loss of GAD-65 is detrimental and can impair GABA neurotransmission, however the loss of GAD-67 is lethal. Due to alternative splicing, two isoforms exist for GAD-67: the predominant GAD-67 form and the minor GAD-25 form. GAD-25 is not expressed in brain but can be found in a variety of endocrine tissues.

## CHROMOSOMAL LOCATION

Genetic locus: GAD1 (human) mapping to 2q31.1; Gad1 (mouse) mapping to 2 C2.

## SOURCE

GAD-67 (F-6) is a mouse monoclonal antibody raised against amino acids 1-101 of GAD-67 of human origin.

## PRODUCT

Each vial contains 200  $\mu$ g IgG<sub>3</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GAD-67 (F-6) is available conjugated to agarose (sc-28376 AC), 500  $\mu$ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-28376 HRP), 200  $\mu$ g/ml, for WB, IHC(P) and ELISA; and to either phycoerythrin (sc-28376 PE), fluorescein (sc-28376 FITC) or Alexa Fluor® 488 (sc-28376 AF488) or Alexa Fluor® 647 (sc-28376 AF647), 200  $\mu$ g/ml, for WB (RGB), IF, IHC(P) and FCM.

## APPLICATIONS

GAD-67 (F-6) is recommended for detection of GAD-67 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:500), 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), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for GAD-67 siRNA (h): sc-35435, GAD-67 siRNA (m): sc-35436, GAD-67 siRNA (r): sc-61889, GAD-67 shRNA Plasmid (h): sc-35435-SH, GAD-67 shRNA Plasmid (m): sc-35436-SH, GAD-67 shRNA Plasmid (r): sc-61889-SH, GAD-67 shRNA (h) Lentiviral Particles: sc-35435-V, GAD-67 shRNA (m) Lentiviral Particles: sc-35436-V and GAD-67 shRNA (r) Lentiviral Particles: sc-61889-V.

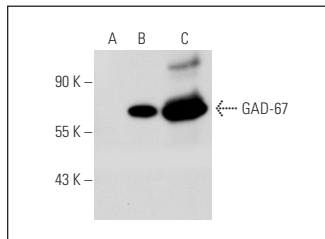
Molecular Weight of GAD-67: 67 kDa.

Positive Controls: GAD-67 (m): 293T Lysate: sc-126883, mouse brain extract: sc-2253 or T98G cell lysate: sc-2294.

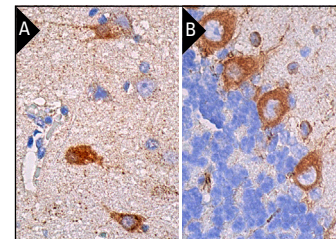
## STORAGE

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

## DATA



GAD-67 (F-6): sc-28376. Western blot analysis of GAD-67 expression in non-transfected: sc-117752 (A) and mouse GAD-67 transfected: sc-126883 (B) 293T whole cell lysates and mouse brain tissue extract (C).



GAD-67 (F-6): sc-28376. Immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebral cortex tissue showing cytoplasmic staining of neuronal cells (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse cerebellum tissue showing cytoplasmic staining of neuronal cells and cells in molecular layer (B).

## SELECT PRODUCT CITATIONS

- Beitnere, U., et al. 2014. Carnitine congener mildronate protects against stress- and haloperidol-induced impairment in memory and brain protein expression in rats. *Eur. J. Pharmacol.* 745: 76-83.
- Gil-Ad, I., et al. 2014. A novel analog of olanzapine linked to sarcosinyl moiety (PGW5) demonstrates high efficacy and good safety profile in mouse models of schizophrenia. *Eur. Neuropsychopharmacol.* 24: 425-436.
- Nakamura, Y., et al. 2015. Downregulation of connexin36 in mouse spinal dorsal horn neurons leads to mechanical allodynia. *J. Neurosci. Res.* 93: 584-591.
- Gasier, H.G., et al. 2017. S-nitrosylation of GAD65 is implicated in decreased GAD activity and oxygen-induced seizures. *Neurosci. Lett.* 653: 283-287.
- Lu, J., et al. 2018. Programming for increased expression of hippocampal GAD67 mediated the hypersensitivity of the hypothalamic-pituitary-adrenal axis in male offspring rats with prenatal ethanol exposure. *Cell Death Dis.* 9: 659.
- Pilipenko, V., et al. 2019. Neuroprotective action of diazepam at very low and moderate doses in Alzheimer's disease model rats. *Neuropharmacology* 144: 319-326.
- Pilipenko, V., et al. 2019. GABA-containing compound gammapyrone protects against brain impairments in Alzheimer's disease model male rats and prevents mitochondrial dysfunction in cell culture. *J. Neurosci. Res.* 97: 708-726.

## RESEARCH USE

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

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