

GAD-65/67 (C-9): sc-365180

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 (γ -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.

REFERENCES

1. Chessler, S.D., et al. 2002. Immune reactivity to GAD25 in type 1 diabetes mellitus. *Autoimmunity* 35: 335-341.
2. Korpershoek, E., et al. 2007. Expression of GAD-67 and novel GAD-67 splice variants during human fetal pancreas development: GAD-67 expression in the fetal pancreas. *Endocr. Pathol.* 18: 31-36.

CHROMOSOMAL LOCATION

Genetic locus: GAD2 (human) mapping to 10p12.1, GAD1 (human) mapping to 2q31.1; Gad2 (mouse) mapping to 2 A3, Gad1 (mouse) mapping to 2 C2.

SOURCE

GAD-65/67 (C-9) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 569-594 at the C-terminus of GAD-67 of human origin.

PRODUCT

Each vial contains 200 μ g IgG₁ kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

GAD-65/67 (C-9) is available conjugated to agarose (sc-365180 AC), 500 μ g/0.25 ml agarose in 1 ml, for IP; to HRP (sc-365180 HRP), 200 μ g/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365180 PE), fluorescein (sc-365180 FITC), Alexa Fluor® 488 (sc-365180 AF488), Alexa Fluor® 546 (sc-365180 AF546), Alexa Fluor® 594 (sc-365180 AF594) or Alexa Fluor® 647 (sc-365180 AF647), 200 μ g/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365180 AF680) or Alexa Fluor® 790 (sc-365180 AF790), 200 μ g/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-365180 P, (100 μ g peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

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RESEARCH USE

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

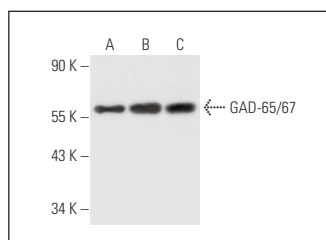
APPLICATIONS

GAD-65/67 (C-9) is recommended for detection of GAD-65 and GAD-67 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 μ g per 100-500 μ 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).

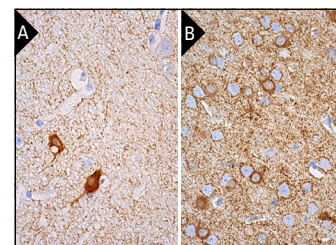
GAD-65/67 (C-9) is also recommended for detection of GAD-65 and GAD-67 in additional species, including equine, canine, bovine and porcine.

Molecular Weight of GAD-65/67: 65/67 kDa.

DATA



GAD-65/67 (C-9): sc-365180. Western blot analysis of GAD-65/67 expression in PANC-1 (A), A-431 (B) and U-251-MG (C) whole cell lysates.



GAD-65/67 (C-9): sc-365180. Immunoperoxidase staining of formalin fixed, paraffin-embedded human cerebral cortex (A) and mouse brain (B) tissue showing cytoplasmic staining of subset of neuronal cells and neuropil staining.

SELECT PRODUCT CITATIONS

1. Adams, D.L., et al. 2015. Co-localization of glutamic acid decarboxylase and vesicular GABA transporter in cytochrome oxidase patches of macaque striate cortex. *Vis. Neurosci.* 32: E026.
2. Makinson, C.D., et al. 2017. Regulation of thalamic and cortical network synchrony by Scn8a. *Neuron* 93: 1165-1179.e6.
3. Di Liberto, G., et al. 2018. Neurons under T cell attack coordinate phagocyte-mediated synaptic stripping. *Cell* 175: 458-471.e19.
4. Lacaille, H., et al. 2019. Impaired interneuron development in a novel model of neonatal brain injury. *eNeuro* 6: ENEURO.0300-18.2019.
5. Mohebiany, A.N., et al. 2020. Microglial A20 protects the brain from CD8 T-cell-mediated immunopathology. *Cell Rep.* 30: 1585-1597.e6.
6. Gong, C., et al. 2021. Human spinal GABA neurons alleviate spasticity and improve locomotion in rats with spinal cord injury. *Cell Rep.* 34: 108889.
7. Li, Y., et al. 2022. The Eph receptor A4 plays a role in demyelination and depression-related behavior. *J. Clin. Invest.* 132: e152187.
8. Ciarpella, F., et al. 2023. Generation of mouse hippocampal brain organoids from primary embryonic neural stem cells. *STAR Protoc.* 4: 102413.

STORAGE

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