SANTA CRUZ BIOTECHNOLOGY, INC.

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

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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. Kanter, I.C., et al. 2007. Cyclophosphamide for anti-GAD antibody-positive refractory status epilepticus. Epilepsia 49: 914-920.

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 µg IgG_1 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 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-365180 HRP), 200 µg/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 µg/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 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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

STORAGE

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

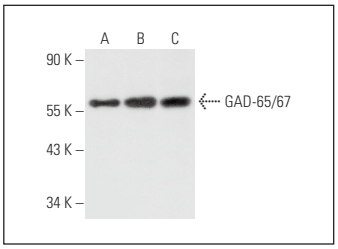
APPLICATIONS

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 µg per 100-500 µg 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).

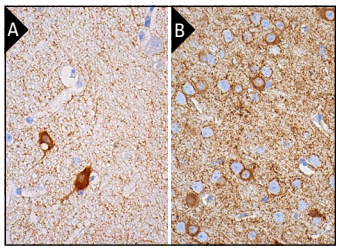
GAD-65/67 (C-9) is also recommended for detection of GAD-65 and GAD-67 in additional species, including equine, canine, bovine and porcine.

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. Shimizu, K., et al. 2016. The role of the AMPA receptor and 5-HT3 receptor on aggressive behavior and depressive-like symptoms in chronic social isolation-reared mice. Physiol. Behav. 153: 70-83.
3. Makinson, C.D., et al. 2017. Regulation of thalamic and cortical network synchrony by Scn8a. Neuron 93: 1165-1179.e6.
4. Di Liberto, G., et al. 2018. Neurons under T cell attack coordinate phagocyte-mediated synaptic stripping. Cell 175: 458-471.e19.
5. Ma, X., et al. 2018. Activation of $GABA_A$ receptors in colon epithelium exacerbates acute colitis. Front. Immunol. 9: 987.
6. Lacaille, H., et al. 2019. Impaired interneuron development in a novel model of neonatal brain injury. eNeuro 6: ENEURO.0300-18.2019.
7. Mohebiany, A.N., et al. 2020. Microglial A20 protects the brain from CD8 T-cell-mediated immunopathology. Cell Rep. 30: 1585-1597.e6.
8. Gong, C., et al. 2021. Human spinal GABA neurons alleviate spasticity and improve locomotion in rats with spinal cord injury. Cell Rep. 34: 108889.

RESEARCH USE

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