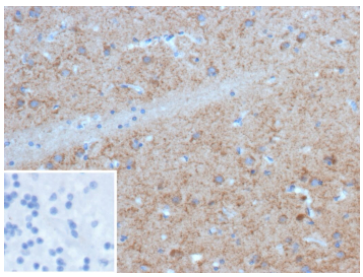
GAD1 Antibody / Glutamate decarboxylase 1 / GAD67 [clone BICCN-GAD67-1A6] (V5904)

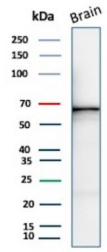
Catalog No.	Formulation	Size
V5904-100UG	0.2 mg/ml in 1X PBS with 0.05% BSA, 0.05% sodium azide	100 ug
V5904-20UG	0.2 mg/ml in 1X PBS with 0.05% BSA, 0.05% sodium azide	20 ug
V5904SAF-100UG	1 mg/ml in 1X PBS; BSA free, sodium azide free	100 ug

Bulk quote request

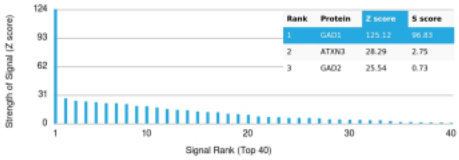
Species Reactivity	Human
Format	Purified
Host	Mouse
Clonality	Monoclonal (mouse origin)
Isotype	Mouse IgG2c, kappa
Clone Name	BICCN-GAD67-1A6
UniProt	Q99259
Localization	Cytoplasm
Applications	Western Blot : 2-4ug/ml Immunohistochemistry (FFPE) : 1-2ug/ml
Limitations	This GAD1/Glutamate decarboxylase 1 antibody is available for research use only.



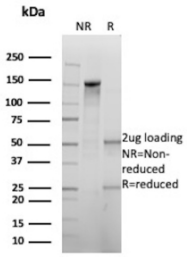
Formalin-fixed, paraffin-embedded human brain stained with GAD1/Glutamate decarboxylase 1 antibody (clone BICCN-GAD67-1A6). Diffuse cytoplasmic brown chromogenic staining is observed in neuronal cell bodies and processes, consistent with GABAergic neuron labeling, while surrounding nuclei are counterstained blue. Inset shows a PBS-only negative control processed without primary antibody, demonstrating minimal non-specific background staining.



Western blot analysis of human brain tissue lysate using GAD1/Glutamate decarboxylase 1 antibody (clone BICCN-GAD67-1A6). Expected molecular weight ~67 kDa.



Analysis of Protein Array containing more than 19,000 full-length human proteins using GAD1/Glutamate decarboxylase 1 antibody (clone BICCN-GAD67-1A6). Z- and S-Score: The Z-score represents the strength of a signal that a monoclonal antibody (MAb) (in combination with a fluorescently-tagged anti-IgG secondary antibody) produces when binding to a particular protein on the HuProtTM array. Z-scores are described in units of standard deviations (SD's) above the mean value of all signals generated on that array. If targets on HuProtTM are arranged in descending order of the Z-score, the S-score is the difference (also in units of SD's) between the Z-score. S-score therefore represents the relative target specificity of a MAb to its intended target. A MAb is considered to specific to its intended target, if the MAb has an S-score of at least 2.5. For example, if a MAb binds to protein X with a Z-score of 43 and to protein Y with a Z-score of 14, then the S-score for the binding of that MAb to protein X is equal to 29.



SDS-PAGE analysis of purified GAD1/Glutamate decarboxylase 1 antibody (clone BICCN-GAD67-1A6). Confirmation of Purity and Integrity of Antibody.

Description

GAD1 antibody targets Glutamate decarboxylase 1, a pyridoxal 5-prime phosphate-dependent enzyme that catalyzes the irreversible decarboxylation of L-glutamate to gamma-aminobutyric acid (GABA), the principal inhibitory neurotransmitter in the mammalian central nervous system. Glutamate decarboxylase 1 is encoded by the GAD1 gene and is commonly referred to as GAD67 based on its approximate molecular size. This enzyme is primarily localized to the cytoplasm of inhibitory neurons, where it supports constitutive GABA synthesis required for maintaining baseline inhibitory tone.

GAD1 antibody reagents are widely used in neuroscience research as robust markers of GABAergic neurons. GAD67 is expressed throughout the brain, including cortex, hippocampus, cerebellum, basal ganglia, and spinal cord, with particularly high expression in interneuron populations. In contrast to its closely related isoform GAD2, also known as GAD65, which is enriched at synaptic terminals and involved in activity-dependent GABA production, GAD67 contributes the majority of steady-state GABA levels within neurons. A GAD1 antibody therefore provides a reliable tool for identifying inhibitory neuronal populations and mapping inhibitory circuitry in both developmental and adult nervous systems.

Beyond the central nervous system, Glutamate decarboxylase 1 expression has been detected in select peripheral tissues and neuroendocrine cells, reflecting broader roles for GABA signaling outside the brain. In the pancreas, for example, GABA produced by beta cells and other endocrine cell types contributes to paracrine signaling within islets. GAD1 antibody labeling has been used to investigate these non-canonical roles of GABAergic signaling in metabolic regulation and endocrine communication.

GAD1 is a member of the glutamate decarboxylase family and requires pyridoxal phosphate as a cofactor for enzymatic activity. Structurally, the protein functions as a homodimer, with each monomer contributing to the formation of the active

site. Regulation of GAD1 expression and activity occurs at multiple levels, including transcriptional control, alternative splicing, and post-translational mechanisms that influence enzyme stability and localization. Use of a Glutamate decarboxylase 1 antibody enables detailed study of these regulatory processes in both physiological and disease contexts.

Altered GAD1 expression has been implicated in a range of neurological and psychiatric disorders, including epilepsy, schizophrenia, autism spectrum disorders, and mood disorders. Reduced GAD67 levels in specific cortical interneuron populations are a well-documented feature of schizophrenia, highlighting the importance of balanced inhibitory signaling for normal cognitive function. In addition, autoantibodies against glutamate decarboxylase proteins are associated with autoimmune neurological conditions such as stiff-person syndrome and certain forms of cerebellar ataxia. A GAD1 antibody is therefore valuable for studying disease-associated changes in inhibitory neuron identity and function.

Clone BICCN-GAD67-1A6 is designed to recognize Glutamate decarboxylase 1 and is suitable for detecting GAD67 expression in research applications. NSJ Bioreagents offers this GAD1 antibody to support investigations into inhibitory neurotransmission, neural circuit organization, neurodevelopment, and neurological disease mechanisms.

Application Notes

Optimal dilution of the GAD1/Glutamate decarboxylase 1 antibody should be determined by the researcher.

Immunogen

Recombinant human GAD1 (GAD67) protein (exact sequence is proprietary) was used as the immunogen for the GAD1/Glutamate decarboxylase 1 antibody.

Storage

GAD1/Glutamate decarboxylase 1 antibody with sodium azide - store at 2 to 8oC; antibody without sodium azide - store at -20 to -80oC.

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