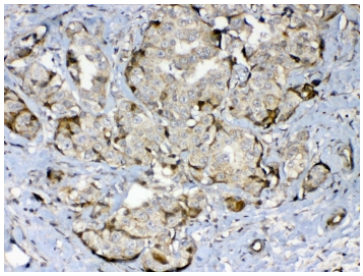
GAD65 Antibody Rabbit Polyclonal (RQ4121)

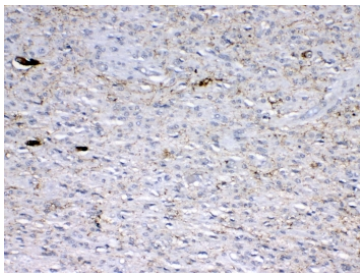
Catalog No.	Formulation	Size
RQ4121	0.5mg/ml if reconstituted with 0.2ml sterile DI water	100 ug

Bulk quote request

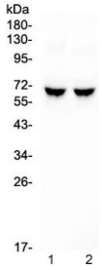
Availability	1-3 business days
Species Reactivity	Human, Mouse, Rat
Format	Antigen affinity purified
Host	Rabbit
Clonality	Polyclonal (rabbit origin)
Isotype	Rabbit IgG
Purity	Antigen affinity purified
Buffer	Lyophilized from 1X PBS with 2% Trehalose and 0.025% sodium azide
UniProt	Q05329
Localization	Cytoplasmic, membrane
Applications	Western Blot : 0.5-1ug/ml IHC (FFPE) : 1-2ug/ml Direct ELISA : 0.1-0.5ug/ml
Limitations	This GAD65 antibody is available for research use only.



Immunohistochemistry of GAD65 Antibody Rabbit Polyclonal in human breast carcinoma. Formalin-fixed, paraffin-embedded human breast cancer tissue demonstrates cytoplasmic HRP-DAB brown staining in tumor epithelial cells, while surrounding stromal elements show minimal signal. The antibody was applied at 1 ug/ml. Heat-induced epitope retrieval was performed by steaming sections in pH 6 citrate buffer for 20 min followed by cooling prior to antibody incubation.



IHC testing of FFPE human glioma with polyclonal GAD65 antibody at 1ug/ml. Required HIER: steam section in pH6 citrate buffer for 20 min and allow to cool prior to testing.



Western blot testing of 1) rat brain and 2) mouse brain with GAD65 antibody at 0.5ug/ml. Predicted molecular weight ~65 kDa.

Description

Glutamate decarboxylase 2 is a pyridoxal phosphate-dependent enzyme encoded by the GAD2 gene and commonly referred to as GAD65. The GAD65 Antibody Rabbit Polyclonal is developed to detect this key gamma-aminobutyric acid synthesizing enzyme in central nervous system and neuroendocrine research applications. GAD2 is located on chromosome 10p11.23 and encodes the 65 kDa isoform of glutamate decarboxylase responsible for catalyzing the conversion of glutamate to gamma-aminobutyric acid, the principal inhibitory neurotransmitter in the brain.

GAD65 is predominantly expressed in GABAergic neurons, where it localizes to the cytoplasm and associates with synaptic vesicle membranes. Unlike the related isoform GAD67 encoded by GAD1, which supports basal GABA synthesis throughout neuronal compartments, GAD2 is more closely linked to activity-dependent neurotransmitter production and regulated synaptic release. Immunohistochemical detection typically demonstrates cytoplasmic staining within neuronal cell bodies and proximal processes in cortex, hippocampus, cerebellum, and other regions enriched for inhibitory interneurons. Most non-neuronal tissues exhibit minimal staining, reflecting the restricted neuronal distribution of GAD65.

Beyond the central nervous system, GAD2 expression is also present in pancreatic islet beta cells, where it contributes to local GABA signaling and functions as a major autoantigen in type 1 diabetes. Tissue-based detection of GAD65 supports identification of neuroendocrine cell subsets and mapping of inhibitory neuronal populations in studies examining excitatory-inhibitory balance. Altered GAD2 expression has been investigated in epilepsy, neurodevelopmental disorders, and neurodegenerative conditions characterized by disrupted inhibitory signaling.

As a central enzyme in GABA biosynthesis, GAD2 plays an essential role in maintaining inhibitory tone and neural circuit stability. A rabbit polyclonal GAD65 antibody supports detection of GAD2 in formalin-fixed, paraffin-embedded specimens and other protein expression studies focused on inhibitory neuron identification and neuroendocrine tissue characterization.

Application Notes

Optimal dilution of the GAD65 antibody should be determined by the researcher.

Immunogen

A recombinant human partial protein corresponding to amino acids K84-L182 was used as the immunogen for the GAD65 antibody rabbit polyclonal.

Storage

After reconstitution, the GAD65 antibody can be stored for up to one month at 4oC. For long-term, aliquot and store at -20oC. Avoid repeated freezing and thawing.