SYSY Antibodies

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GAD1 (GAD67)

Cat.No. 198 013; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin was added for stabilization. For **reconstitution** add 50 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°C until use. Antibodies should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Applications	**WB**: not recommended **IP**: not tested yet **ICC**: 1 : 500 **IHC**: 1 : 200 up to 1 : 500 **IHC-P**: 1 : 1000
Immunogen	Recombinant protein corresponding to residues near the amino-terminus of mouse GAD1. (UniProt Id: P48318)
Reactivity	Reacts with: human (Q99259), rat (P18088), mouse (P48318). Other species not tested yet.
Specificity	Specific for GAD 1 / GAD 67.

TO BE USED IN VITRO / FOR RESEARCH ONLY
NOT TOXIC, NOT HAZARDOUS, NOT INFECTIOUS, NOT CONTAGIOUS

Background

The **g**lutamic **a**cid **d**ecarboxylases GAD1 and GAD2, also referred to as GAD67, and GAD65 respectively, synthesize γ-aminobutyric acid (GABA), the major inhibitory neurotransmitter in the central nervous system. Therefore, GADs are widely used markers for the GABAergic system (1). The hydrophilic GAD1 can heterodimerize with the membrane achored GAD2 and a part of GAD1 is targeted to inhibitory nerve terminals by this mechanism (2). Although both proteins exhibit significant differences in their N-terminus they share high homology in the rest of the molecule (3). GAD1 and 2 also occur in rodent pancreatic islets of Langerhans, whereas human islets mainly express GAD2 which has been identified as a major autoantigen in type 1 diabetes (3).

Selected References for 198 013

Abolished perineuronal nets and altered parvalbumin-immunoreactivity in the nucleus reticularis thalami of wildtype and 3xTg mice after experimental stroke.
Härtig W, Appel S, Suttkus A, Grosche J, Michalski D
Neuroscience (2016) 337: 66-87. . **IHC**

Directing astroglia from the cerebral cortex into subtype specific functional neurons.
Heinrich C, Blum R, Gascón S, Masserdotti G, Tripathi P, Sánchez R, Tiedt S, Schroeder T, Götz M, Berninger B
PLoS biology (2010) 85: e1000373. . **ICC; tested species: mouse**

A midbrain circuit mechanism for noise-induced negative valence coding.
Zhou S, Zhu Y, Du A, Niu S, Du Y, Yang Y, Chen W, Du S, Sun L, Liu Y, Wu H, et al.
Nature communications (2025) 161: 4610. . **IHC; tested species: mouse**

Conversion of glioma cells into neuron-like cells by small molecules.
Yi Y, Che W, Xu P, Mao C, Li Z, Wang Q, Lyu J, Wang X
iScience (2024) 2711: 111091. . **ICC; tested species: human**

Spontaneous Activity Predicts Survival of Developing Cortical Neurons.
Warm D, Bassetti D, Schroer J, Luhmann HJ, Sinning A
Frontiers in cell and developmental biology (2022) 10: 937761. . **ICC; tested species: mouse**

NETO1 Regulates Postsynaptic Kainate Receptors in CA3 Interneurons During Circuit Maturation.
Orav E, Dowavic I, Huupponen J, Taira T, Lauri SE
Molecular neurobiology (2019) : . . **IHC; tested species: mouse**

Deletion of the Fractalkine Receptor, CX3CR1, Improves Endogenous Repair, Axon Sprouting, and Synaptogenesis after Spinal Cord Injury in Mice.
Freria CM, Hall JC, Wei P, Guan Z, McTigue DM, Popovich PG
The Journal of neuroscience : the official journal of the Society for Neuroscience (2017) 3713: 3568-3587. . **IHC; tested species: mouse**

Short-term plasticity and modulation of synaptic transmission at mammalian inhibitory cholinergic olivocochlear synapses.
Katz E, Elgoyhen AB
Frontiers in systems neuroscience (2014) 8: 224. . **IHC; tested species: mouse**

Activation of presynaptic GABA(B(1a,2)) receptors inhibits synaptic transmission at mammalian inhibitory cholinergic olivocochlear-hair cell synapses.
Wedemeyer C, Zorrilla de San Martín J, Ballestero J, Gómez-Casati ME, Torbidoni AV, Fuchs PA, Bettler B, Elgoyhen AB, Katz E
The Journal of neuroscience : the official journal of the Society for Neuroscience (2013) 3339: 15477-87. . **IHC; tested species: mouse**

Selected General References

Green fluorescent protein expression and colocalization with calretinin, parvalbumin, and somatostatin in the GAD67-GFP knock-in mouse.
Tamamaki N et al. J. Comp. Neurol. (2003) PubMed:14574680

Access the online factsheet including applicable protocols at https://sysy.com/product/198013 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All our antibodies and control proteins / peptides are shipped lyophilized (vacuum freeze-dried) and are stable in this form without loss of quality at ambient temperatures for several weeks.

Storage of Sealed Vials after Delivery

- **Unlabeled** and **biotin-labeled antibodies** and **control proteins** should be stored at 4°C before reconstitution. **They must not be stored in the freezer when still lyophilized!** Temperatures below zero may cause loss of performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long term storage (several months) may lead to aggregation.
- **Control peptides** should be kept at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- The storage freezer must not be of the frost-free variety ("no-frost freezer"). This cycle between freezing and thawing (to reduce frost-build-up), which is exactly what should be avoided. For the same reason, antibody vials should be placed in an area of the freezer that has minimal temperature fluctuations, for instance towards the back rather than on a door shelf.
- Aliquot the antibody and store frozen (-20°C to -80°C). Avoid very small aliquots (below 20 µl) and use the smallest storage vial or tube possible. The smaller the aliquot, the more the stock concentration is affected by evaporation and adsorption of the antibody to the surface of the storage vial or tube. Adsorption of the antibody to the surface leads to a substantial loss of activity.
- The addition of glycerol to a final concentration of 50% lowers the freezing point of your stock and keeps your antibody at -20°C in liquid state. This efficiently avoids freeze and thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C.

Monoclonal Antibodies

- **Ascites** and **hybridoma supernatant** should be stored at -20°C up to -80°C. **Prolonged storage at 4°C is not recommended!** Unlike serum, ascites may contain proteases that will degrade the antibodies.
- **Purified IgG** should be stored at -20°C up to -80°C. Adding a carrier protein like BSA will increase long term stability. Many of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Polyclonal Antibodies

- **Crude antisera**: With anti-microbials added, they may be stored at 4°C. However, frozen storage (-20°C up to -80°C) is preferable.
- **Affinity purified antibodies**: Less robust than antisera. Storage at -20°C up to -80°C is recommended. Adding a carrier protein like BSA will increase long term stability. Most of our antibodies already contain carrier proteins. Please refer to the data-sheet for detailed information.

Fluorescence-labeled Antibodies

- Store as a liquid with 1 : 1 (v/v) glycerol at -20°C. Protect these antibodies from light exposure.

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All our purified antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the amount of deionized water given in the respective datasheet. If higher volumes are preferred, add water as mentioned above and then the desired amount of PBS and a stabilizing carrier protein (e.g. BSA) to a final concentration of 2%. Some of our antibodies already contain albumin. Take this into account when adding more carrier protein.
  For complete reconstitution, carefully remove the lid. After adding water, briefly vortex the solution. You can spin down the liquid by placing the vial into a 50 ml centrifugation tube filled with paper.
- If desired, add small amounts of azide or thimerosal to prevent microbial growth. This is especially recommended if you want to keep an aliquot a 4°C.
- After reconstitution of fluorescence-labeled antibodies, add 1 : 1 (v/v) glycerol to a final concentration of 50%. This lowers the freezing point of your stock and keeps your antibody in liquid state at -20°C.
- Glycerol may also be added to unlabeled primary antibodies. It is a suitable way to avoid freeze-thaw cycles.
- Please refer to our **tips and hints for subsequent storage** of reconstituted antibodies and control peptides and proteins.