SYSY Antibodies

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GAD2 (GAD65)

Cat.No. 198 111; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. Albumin and azide were added for stabilization. For **reconstitution** add 100 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**: 1 : 1000 (AP staining) **IP**: yes **ICC**: 1 : 500 **IHC**: 1 : 200 up to 1 : 500 **IHC-P (FFPE)**: 1 : 100 up to 1 : 1000 **DNA-PAINT**: external data (see remarks) **ELISA**: yes (see remarks)
Clone	26H1D1
Subtype	IgG3 (κ light chain)
Immunogen	Recombinant protein corresponding to the amino terminus of mouse GAD2 (UniProt Id: P48320)
Epitop	AA 3 to 17 from mouse GAD2 (UniProt Id: P48320)
Reactivity	Reacts with: rat (Q05683), mouse (P48320), human (Q05329). Other species not tested yet.
Specificity	Specific for GAD2 / GAD65
Matching control	198-1P
Remarks	**DNA-PAINT**: This antibody has been successfully applied and published for this method by customers (see application-specific references). **ELISA**: The ELISA-protocol for membrane proteins is required. Suitable as capture antibody for sandwich-ELISA. Please refer to the protocol for suitable detector antibodies.

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).

For more information on protein expression pattern, please refer to the overview image in our SYSY Antibodies ATLAS.

Selected References for 198 111

Spatial proteomics in neurons at single-protein resolution.
Unterauer EM, Shetab Boushehri S, Jevdokimenko K, Masullo LA, Ganji M, Sograte-Idrissi S, Kowalewski R, Strauss S, Reinhardt SCM, Perovic A, Marr C, et al.
Cell (2024) 1877: 1785-1800.e16. . **DNA_PAINT; tested species: rat**

Immunocytochemical identification of electroneutral Na□-coupled HCO₃□ transporters in freshly dissociated mouse medullary raphé neurons.
Coley AA, Ruffin VA, Moss FJ, Hopfer U, Boron WF
Neuroscience (2013) 246: 451-67. . **ICC; tested species: mouse**

ASCL1- and DLX2-induced GABAergic neurons from hiPSC-derived NPCs.
Barretto N, Zhang H, Powell SK, Fernando MB, Zhang S, Flaherty EK, Ho SM, Slesinger PA, Duan J, Brennand KJ
Journal of neuroscience methods (2020) 334: 108548. . **ICC; tested species: human**

Cardiolipin exposure on the outer mitochondrial membrane modulates α-synuclein.
Ryan T, Bamm VV, Stykel MG, Coackley CL, Humphries KM, Jamieson-Williams R, Ambasudhan R, Mosser DD, Lipton SA, Harauz G, Ryan SD, et al.
Nature communications (2018) 91: 817. . **ICC; tested species: human**

ELKS controls the pool of readily releasable vesicles at excitatory synapses through its N-terminal coiled-coil domains.
Held RG, Liu C, Kaeser PS
eLife (2016) 5: . . **ICC**

Electrical Responses and Spontaneous Activity of Human iPS-Derived Neuronal Networks Characterized for 3-month Culture with 4096-Electrode Arrays.
Amin H, Maccione A, Marinaro F, Zordan S, Nieus T, Berdondini L
Frontiers in neuroscience (2016) 10: 121. . **ICC; tested species: human**

An E3-ligase-based method for ablating inhibitory synapses.
Gross GG, Straub C, Perez-Sanchez J, Dempsey WP, Junge JA, Roberts RW, Trinh le A, Fraser SE, De Koninck Y, De Koninck P, Sabatini BL, et al.
Nature methods (2016) 138: 673-8. . **ICC; tested species: mouse**

Vesicular glutamate transporter 1 orchestrates recruitment of other synaptic vesicle cargo proteins during synaptic vesicle recycling.
Pan PY, Marrs J, Ryan TA
The Journal of biological chemistry (2015) 29037: 22593-601. . **ICC**

Evaluation of established human iPSC-derived neurons to model neurodegenerative diseases.
Meneghello G, Verheyen A, Van Ingen M, Kuijlaars J, Tuefferd M, Van Den Wyngaert I, Nuydens R
Neuroscience (2015) 301: 204-12. . **ICC; tested species: human**

Access the online factsheet including applicable protocols at https://sysy.com/product/198111 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable 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. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.