SYSY Antibodies

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DAT (SLC6A3)

Cat.No. 284 005; Polyclonal Guinea pig antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were 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**: not tested yet **IHC**: 1 : 200 up to 1 : 500 **IHC-P (FFPE)**: 1 : 500 **EM**: external data (see remarks)
Immunogen	Synthetic peptide corresponding to residues near the amino terminus of rat DAT (UniProt Id: P23977)
Reactivity	Reacts with: rat (P23977), mouse (Q01959). Other species not tested yet.
Remarks	**EM**: This antibody has been successfully applied and published for this method by customers (see application-specific references).

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

Background

The **d**op**a**mine **t**ransporter (DAT), encoded by the SLC6A3 gene, plays a crucial role in regulating dopaminergic neurotransmission by facilitating the reuptake of dopamine (DA) from the synaptic cleft back into presynaptic neurons (1, 2). Structurally, DAT consists of 12 transmembrane domains with interspersed extracellular and intracellular loops. The N- and C-terminal regions of the protein are intracellular, providing multiple potential phosphorylation sites that regulate its activity (1, 3). Functionally, DAT contributes to the termination of DA signaling by reuptaking DA, thereby controlling both the duration and magnitude of dopaminergic transmission (4). It is predominantly found in dopaminergic neurons and enriched in regions such as the striatum, substantia nigra, and ventral tegmental area, which are associated with motor control and reward mechanisms (5). Alterations in DAT expression have been linked to various neuropsychiatric disorders, including Parkinson's disease and schizophrenia, emphasizing its importance in maintaining dopaminergic homeostasis and neuronal integrity (6, 7).

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

Selected References for 284 005

Dopamine transporter and synaptic vesicle sorting defects underlie auxilin-associated Parkinson's disease.
Vidyadhara DJ, Somayaji M, Wade N, Yücel B, Zhao H, Shashaank N, Ribaudo J, Gupta J, Lam TT, Sames D, Greene LE, et al.
Cell reports (2023) 423: 112231. . **IHC, EM; tested species: mouse**

Molecular interrogation of hypothalamic organization reveals distinct dopamine neuronal subtypes.
Romanov RA, Zeisel A, Bakker J, Girach F, Hellysaz A, Tomer R, Alpár A, Mulder J, Clotman F, Keimpema E, Hsueh B, et al.
Nature neuroscience (2017) 202: 176-188. . **IHC**

Selected General References

Hyperlocomotion and indifference to cocaine and amphetamine in mice lacking the dopamine transporter.
Giros B et al. Nature (1996) PubMed:8628395

Dynamic control of the dopamine transporter in neurotransmission and homeostasis.
Bu M et al. NPJ Parkinsons Dis (2021) PubMed:33674612

Striatal presynaptic dopamine in schizophrenia, Part I: meta-analysis of dopamine active transporter (DAT) density.
Fusar-Poli P et al. Schizophr Bull (2013) PubMed:22282456

Neurotransmitter transporters as molecular targets for addictive drugs.
Amara SG et al. Drug Alcohol Depend (1998) PubMed:9716932

Drug abuse: hedonic homeostatic dysregulation.
Koob GF et al. Science (1997) PubMed:9311926

Dopamine transporter immunoreactivity in rat brain.
Freed C et al. J Comp Neurol (1995) PubMed:7499533

Neurotransmitter transporters: recent progress.
Amara SG et al. Annu Rev Neurosci (1993) PubMed:8096377

Access the online factsheet including applicable protocols at https://sysy.com/product/284005 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.