SYSY Antibodies

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Dopamine receptor D1

Cat.No. 376 002; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	200 µl antiserum, lyophilized. For **reconstitution** add 200 µl H_2O, then aliquot and store at -20°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 tested yet **IP**: not tested yet **ICC**: not tested yet **IHC**: 1 : 500 **IHC-P (FFPE)**: 1 : 500
Immunogen	Recombinant protein comprising the C-terminal cytoplasmic domain of mouse Dopamine receptor D1 (UniProt Id: Q61616)
Reactivity	Reacts with: mouse (Q61616), rat (P18901). Other species not tested yet.
Specificity	Specific for dopamine receptor D1. The antibody may have a weak crossreactivity to dopamine receptor D5.

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

Background

Dopamine receptors transduce the signal of the neurotransmitter dopamine. Dopamine regulates a variety of functions including locomotor activity, emotion, food intake, hormone secretion, learning, and memory. The dysregulation of the dopaminergic system results in several neurological and neuropsychiatric diseases including Parkinson's disease, dystonia, and schizophrenia. Dopamine plays also an important role in the pathogenesis of hypertension by regulating epithelial sodium transport and by interacting with vasoactive hormones.
All five dopamine receptors belong to the 7-transmembrane domain, G protein-coupled receptor superfamily. They have been divided into two subfamilies: Two D1-like receptor subtypes (**D1** and D5) couple to the G protein Gs and activate adenylyl cyclase, increasing the intracellular concentration of the second messenger cAMP. The other receptor subtypes belong to the D2-like subfamily (**D2**, D3, and D4) and are prototypic of G protein-coupled receptors that inhibit adenylyl cyclase.
Dopamine receptors can form heteromeric complexes with dopamine receptors from other subtypes or with receptors of other endogenous signaling ligands. These heteromeric complexes have functional properties distinct from the component receptors or are able to modulate the canonical signaling.
Dopamine receptor D1 is widely distributed throughout the brain with the highest expression in the striatum. In the periphery, the D1 receptor has been detected in the adrenal cortex, kidney and heart. Recently, it was shown that dopamine receptor D1 is expressed in breast cancer, thereby identifying this receptor as a novel therapeutic target in this disease. D1 receptor overexpression is associated with advanced breast cancer and poor prognosis.
Dopamine receptor D2 is most abundant in the striatum where it is expressed in medium spiny neurons. Functionally, the D1 and D2 receptors have been implicated in the regulation of both locomotor and cognitive functions.

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

Selected References for 376 002

Direct-Pathway Spiny Projection Neuron Inhibition Evokes Transient Circuit Imbalance Manifested as Rotational Behavior.
Christensen M, Emil Nørr S, Gether U, Rickhag M
Neuroscience (2020) : . . **IHC; tested species: mouse**

Loss of the parkinsonism-associated protein FBXO7 in glutamatergic forebrain neurons in mice leads to abnormal motor behavior and synaptic defects.
Wang J, Joseph S, Vingill S, Dere E, Tatenhorst L, Ronnenberg A, Lingor P, Preisinger C, Ehrenreich H, Schulz JB, Stegmüller J, et al.
Journal of neurochemistry (2023) : . . **IHC; tested species: mouse**

Selected General References

Expression and therapeutic targeting of dopamine receptor-1 (D1R) in breast cancer.
Borcherding DC et al. Oncogene (2016) PubMed:26477316

Dopamine receptor heteromeric complexes and their emerging functions.
George SR et al. Prog. Brain Res. (2014) PubMed:24968781

Access the online factsheet including applicable protocols at https://sysy.com/product/376002 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.