SYSY Antibodies

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Tyrosine hydroxylase

Cat.No. 213 004; Polyclonal Guinea pig antibody, 100 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For **reconstitution** add 100 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 (see remarks) **IHC-P**: 1 : 500
Immunogen	Recombinant protein corresponding to AA 65 to 255 from human TyrH (UniProt Id: P07101)
Reactivity	Reacts with: human (P07101), rat (P04177), mouse (P24529), human (P07101). Other species not tested yet.
Specificity	Shows some cross-reactivity to tryptophane hydroxylase.
Remarks	**IHC**: Antigen retrieval with citrate buffer pH 6 is required.

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

Background

Tyrosine hydroxylase is one of the key enzymes in the synthesis pathway of catecholamines like adrenalin, noradrenalin and dopamin and is frequently used as a marker for dopaminergic neurons. This neuronal subpopulation is especially affected in Parkinson's disease.

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

Selected References for 213 004

Chromosome 22q11.2 deletion causes PERK-dependent vulnerability in dopaminergic neurons.
Arioka Y, Shishido E, Kushima I, Suzuki T, Saito R, Aiba A, Mori D, Ozaki N
EBioMedicine (2020) 63: 103138. . **WB; tested species: mouse**

Catecholaminergic-to-cholinergic transition of sympathetic nerve fibers is stimulated under healthy but not under inflammatory arthritic conditions.
Stangl H, Springorum HR, Muschter D, Grässel S, Straub RH
Brain, behavior, and immunity (2015) 46: 180-91. . **ICC**

Stratified organization and disorganization of inner plexiform layer revealed by TNAP activity in healthy and diabetic rat retina.
Kántor O, Varga A, Tóth R, Énzsöly A, Pálfi E, Kovács-Öller T, Nitschke R, Szél Á, Székely A, Völgyi B, Négyessy L, et al.
Cell and tissue research (2015) 3592: 409-421. . **IHC**

On-Site Formation of Functional Dopaminergic Presynaptic Terminals on Neuroligin-2-Modified Gold-Coated Microspheres.
Cho W, Jung M, Yoon SH, Jeon J, Oh MA, Kim JY, Park M, Kang CM, Chung TD
ACS applied materials & interfaces (2024) 163: 3082-3092. . **ICC; tested species: rat**

Characterization of striatal dopamine projections across striatal subregions in reversal learning.
van der Merwe RK, Nadel JA, Copes-Finke D, Pawelko S, Scott JS, Ghanem M, Fox M, Morehouse C, McLaughlin R, Maddox C, Albert-Lyons R, et al.
The European journal of neuroscience (2023) : . . **IHC; tested species: mouse**

Functional architecture of dopamine neurons driving fear extinction learning.
Salinas-Hernández XI, Zafiri D, Sigurdsson T, Duvarci S
Neuron (2023) 11123: 3854-3870.e5. . **IHC; tested species: mouse**

Immunolocalization of kappa opioid receptors in the axon initial segment of a group of embryonic mesencephalic dopamine neurons.
Escobar AP, Meza RC, Gonzalez M, Henny P, Andrés ME
IBRO neuroscience reports (2022) 12: 411-418. . **ICC; tested species: rat**

Developmental errors in the common marmoset retina.
Haverkamp S, Mietsch M, Briggman KL
Frontiers in neuroanatomy (2022) 16: 1000693. . **IHC; tested species: marmoset**

Mechanisms of Kappa Opioid Receptor Potentiation of Dopamine D2 Receptor Function in Quinpirole-Induced Locomotor Sensitization in Rats.
Escobar AP, González MP, Meza RC, Noches V, Henny P, Gysling K, España RA, Fuentealba JA, Andrés ME
The international journal of neuropsychopharmacology (2017) 208: 660-669. . **IHC; tested species: mouse**

Selected General References

Mesencephalic dopamine neuron number and tyrosine hydroxylase content: Genetic control and candidate genes.
Vadasz C et al. Neuroscience (2007) PubMed:17920205

Tyrosine hydroxylase, the rate-limiting enzyme in catecholamine biosynthesis: discovery of common human genetic variants governing transcription, autonomic activity, and blood pressure in vivo.
Rao F et al. Circulation (2007) PubMed:17698732

Access the online factsheet including applicable protocols at https://sysy.com/product/213004 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.