

## Tyrosine hydroxylase

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

### Data Sheet

Reconstitution/ Storage	100 µl antiserum, lyophilized. For <b>reconstitution</b> add 100 µl H <sub>2</sub> O, 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	<b>WB:</b> not tested yet <b>IP:</b> not tested yet <b>ICC:</b> not tested yet <b>IHC:</b> 1 : 500 <b>IHC-P:</b> not tested yet
Immunogen	Recombinant protein corresponding to AA 65 to 255 from human TyrH (UniProt Id: P07101)
Reactivity	Reacts with: human (P07101), rat (P04177), mouse (P24529). Other species not tested yet.
Specificity	Shows some cross-reactivity to tryptophane hydroxylase.

**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.

## 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, Négycs 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

Differential regulation of the human tyrosine hydroxylase isoforms via hierarchical phosphorylation.  
Lehmann IT et al. J. Biol. Chem. (2006) PubMed:16644734

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 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 at 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.