SYSY Antibodies

Rudolf-Wissell-Str. 28a
37079 Göttingen, Germany
Phone: +49 551-50556-0
Fax: +49 551-50556-384
E-mail: sales@sysy.com
Web: www.sysy.com

ZnT3

Cat.No. 197-0P; control protein, 100 µg protein (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg protein, lyophilized. For **reconstitution** add 100 µl H_2O to get a 1mg/ml solution in TBS. Then aliquot and store at -20°C to -80°C until use. Control proteins should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Immunogen	Recombinant protein corresponding to AA 2 to 75 from mouse ZnT3 (UniProt Id: P97441)
Recommended dilution	Optimal concentrations should be determined by the end-user.
Matching antibodies	197 002, 197 003, 197 003C3, 197 004, 197 011, 197 011BT, 197 006, 197 003DY2, 197 003DY5
Remarks	This control protein consists of the recombinant protein (aa 2 - 75 of mouse ZnT 3) that has been used for immunization. It has been tested in preadsorption experiments and blocks efficiently and specifically the corresponding signal in Western blots. The amount of peptide needed for efficient blocking depends on the titer and on the affinity of the antibody to the antigen.

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

Background

The essential micronutrient zinc (Zn2+) plays an important role in many biological processes like growth, development, and reproduction. It is found in the active site of many enzymes, where ionization, polarization or replacement of Zn2+ bound water is involved in catalytic reactions. As a charged ion Zn2+ cannot cross biological membranes by simple diffusion and must be transported by specialized transport mechanisms. Two families of Zn2+ transporters, SLC30 (ZnT, Zn2+ transporter) and SLC39 (ZIP, Zinc (Zn2+)-Iron (Fe2+) permease), function in opposite directions to maintain cellular Zn2+ homeostasis (1).
Ten Zn2+ transporter proteins **ZnT1-10** have been described. All of them contain several transmembrane domains and a histidine rich intracellular loop (2).
In the central nervous system Zn2+ plays important roles in synaptic function and plasticity. At synapses Zn2+ is stored in synaptic vesicles by a mechanism depending on the integral membrane protein **ZnT3** (3). ZnT3 probably contributes to the prevention of aging-related cognitive loss, because ZnT3 expression levels fall with age and in patients with Alzheimer's or Parkinson's disease. Consistent with these results, aged ZnT3-KO mice exhibit deficits in learning and memory (3). ZnT3, along with other ZnT family members, is expressed in several endocrine organs, including the pituitary gland, adrenal glands, and thyroid but is absent in the pancreas (4). This transporter also plays an essential role in reproductive health as some studies have demonstrated ZnT3 expression in the ovary. It was reported that ZnT3 is expressed in mouse oocytes throughout all stages of follicular development, where it likely supports Zn2+ accumulation necessary for oocyte maturation. Disruption of ZnT3 in oocytes leads to impaired zinc storage, potentially compromising fertility (5). Interestingly, while ZnT3 mRNA is expressed in testis, no protein was detectable. This discrepancy between mRNA and protein levels highlights the importance of post-transcriptional regulation and protein stability in determining ZnT3's functional presence in reproductive tissues (6).

Selected References for 197-0P

Expression profile of the zinc transporter ZnT3 in taste cells of rat circumvallate papillae and its role in zinc release, a potential mechanism for taste stimulation.
Nishida K, Bansho S, Ikukawa A, Kubota T, Ohishi A, Nagasawa K
European journal of histochemistry : EJH (2022) 664: . . **IHC; tested species: rat**

Intracellular Zn2+ transients modulate global gene expression in dissociated rat hippocampal neurons.
Sanford L, Carpenter MC, Palmer AE
Scientific reports (2019) 91: 9411. . **ICC; tested species: rat**

Selected General References

The SLC30 family of zinc transporters - a review of current understanding of their biological and pathophysiological roles.
Huang L et al. Mol Aspects Med (2013) PubMed:23506888

Zinc transporter ZnT3/Slc30a3 has a potential role in zinc ion influx in mouse oocytes.
Kageyama A et al. J Reprod Dev (2024) PubMed:39048372

The Physiological, Biochemical, and Molecular Roles of Zinc Transporters in Zinc Homeostasis and Metabolism.
Kambe T et al. Physiol Rev (2015) PubMed:26084690

Widespread expression of zinc transporter ZnT (SLC30) family members in mouse endocrine cells.
Zhong ML et al. Histochem Cell Biol (2012) PubMed:22673841

Access the online factsheet including applicable protocols at https://sysy.com/product/197-0P 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 a 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.