SYSY
Antibodies

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ZnT3 (SLC30A3)

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 residues near the amino terminus of 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 (Zn^{2+}) 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 Zn^{2+} bound water is involved in catalytic reactions. As a charged ion Zn^{2+} cannot cross biological membranes by simple diffusion and must be transported by specialized transport mechanisms. Two families of Zn^{2+} transporters, SLC30 (ZnT, Zn^{2+} transporter) and SLC39 (ZIP, Zinc (Zn^{2+})-Iron (Fe^{2+}) permease), function in opposite directions to maintain cellular Zn^{2+} homeostasis (1).
Ten Zn^{2+} 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 Zn^{2+} plays important roles in synaptic function and plasticity. At synapses Zn^{2+} 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 Zn^{2+} 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).

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

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

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 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.