SYSY Antibodies

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α/β Synuclein

Cat.No. 128 002; 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**: 1 : 1000 (AP staining) **IP**: yes **ICC**: 1 : 500 **IHC**: 1 : 500 **IHC-P (FFPE)**: 1 : 1000 up to 1 : 2000 **ExM**: external data (see remarks) **DNA-PAINT**: external data (see remarks) **EM**: external data (see remarks)
Immunogen	Synthetic peptide corresponding to AA 2 to 25 from human α-Synuclein (UniProt Id: P37840)
Reactivity	Reacts with: rat (P37377, Q63754), mouse (O55042, Q91ZZ3), zebrafish, human (P37840, Q16143). Other species not tested yet.
Specificity	Recognizes α synuclein and β synuclein.
Remarks	**ExM**: This antibody has been successfully applied and published for this method by customers (see application-specific references). **DNA-PAINT**: This antibody has been successfully applied and published for this method by customers (see application-specific references). **EM**: This antibody has been successfully applied and published for this method by customers (see application-specific references).

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

Background

Synuclein proteins are produced by three genes. They share structural resemblance to apolipoproteins, but are abundant in the neuronal cytosol and present in enriched amounts at presynaptic terminals.
Synucleins have been specifically implicated in three diseases: Alzheimer's (AD), Parkinson's (PD) and breast cancer. In AD, a peptide derived from α-synuclein forms an intrinsic component of plaque amyloid. In PD, an α-synuclein allele is genetically linked to several independent familial cases, and the protein appears to accumulate in Lewy bodies. In breast cancer, increased expression of γ-synuclein correlates with disease progression.
In songbirds, α-synuclein expression is correlated with plasticity in the developing song control system. Although the normal function of synucleins is unknown, a role in synaptic plasticity seems likely.

Selected References for 128 002

Mitochondrial translocation of alpha-synuclein is promoted by intracellular acidification.
Cole NB, Dieuliis D, Leo P, Mitchell DC, Nussbaum RL
Experimental cell research (2008) 31410: 2076-89. . **WB, ICC, EM**

Composition of isolated synaptic boutons reveals the amounts of vesicle trafficking proteins.
Wilhelm BG, Mandad S, Truckenbrodt S, Kröhnert K, Schäfer C, Rammner B, Koo SJ, Claßen GA, Krauss M, Haucke V, Urlaub H, et al.
Science (New York, N.Y.) (2014) 3446187: 1023-8. . **WB, ICC, IHC; tested species: mouse,rat**

Spatial proteomics in neurons at single-protein resolution.
Unterauer EM, Shetab Boushehri S, Jevdokimenko K, Masullo LA, Ganji M, Sograte-Idrissi S, Kowalewski R, Strauss S, Reinhardt SCM, Perovic A, Marr C, et al.
Cell (2024) 1877: 1785-1800.e16. . **DNA_PAINT; tested species: rat**

One-step nanoscale expansion microscopy reveals individual protein shapes.
Shaib AH, Chouaib AA, Chowdhury R, Altendorf J, Mihaylov D, Zhang C, Krah D, Imani V, Spencer RKW, Georgiev SV, Mougios N, et al.
Nature biotechnology (2024) : . . **EXM; tested species: rat**

Trafficking proteins show limited differences in mobility across different postsynaptic spines.
Mougios N, Opazo F, Rizzoli SO, Reshetniak S
iScience (2023) 262: 105971. . **ICC; tested species: rat**

DOPAL initiates αSynuclein-dependent impaired proteostasis and degeneration of neuronal projections in Parkinson's disease.
Masato A, Plotegher N, Terrin F, Sandre M, Faustini G, Thor A, Adams S, Berti G, Cogo S, De Lazzari F, Fontana CM, et al.
NPJ Parkinson's disease (2023) 91: 42. . **WB; tested species: mouse,rat**

A nanobody-based fluorescent reporter reveals human α-synuclein in the cell cytosol.
Gerdes C, Waal N, Offner T, Fornasiero EF, Wender N, Verbarg H, Manzini I, Trenkwalder C, Mollenhauer B, Strohäker T, Zweckstetter M, et al.
Nature communications (2020) 111: 2729. . **ICC; tested species: rat**

Over-expression of alpha-synuclein in the nervous system enhances axonal degeneration after peripheral nerve lesion in a transgenic mouse strain.
Siebert H, Kahle PJ, Kramer ML, Isik T, Schlüter OM, Schulz-Schaeffer WJ, Brück W
Journal of neurochemistry (2010) 1144: 1007-18. . **WB**

Brain alpha-synuclein accumulation in multiple system atrophy, Parkinson's disease and progressive supranuclear palsy: a comparative investigation.
Tong J, Wong H, Guttman M, Ang LC, Forno LS, Shimadzu M, Rajput AH, Muenter MD, Kish SJ, Hornykiewicz O, Furukawa Y, et al.
Brain : a journal of neurology (2010) 133Pt 1: 172-88. . **WB; tested species: human**

Access the online factsheet including applicable protocols at https://sysy.com/product/128002 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.