SYSY Antibodies

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SATB2

Cat.No. 327 004; 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 recommended **IP**: not tested yet **ICC**: 1 : 500 **IHC**: 1 : 200 **IHC-P**: 1 : 500
Immunogen	Synthetic peptide corresponding to AA 718 to 733 from mouse SATB2 (UniProt Id: Q8VI24)
Reactivity	Reacts with: rat (D3ZJ19), mouse (Q8VI24). Other species not tested yet.

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

Background

The **S**pecial **AT**-rich sequence-**b**inding protein **2** or **SATB2** is a transcription factor required for the initiation of the genetic program for the upper-layer neurons (UL1).
Together with Ctip 2, Coup-TFI, and Fezf2 it is involved in the fine-tuned sequential formation and specification of the different excitatory neuron populations forming the definitive six-layered cortical structure (1-4).
Beyond its pivotal role in neurodevelopment, SATB2 is also expressed in non-neuronal tissues, notably in the epithelium of the lower gastrointestinal tract, including the colon. In normal physiology, it is strongly expressed in glandular cells of the colorectal mucosa. In pathology, SATB2 serves as a highly sensitive and specific immunohistochemical marker for colorectal epithelial differentiation and is expressed in the majority of primary and metastatic colorectal adenocarcinomas (5, 6). This colonic expression pattern makes SATB2 a valuable diagnostic biomarker in surgical pathology, particularly in determining the origin of metastatic lesions.

Selected References for 327 004

Inducing Different Neuronal Subtypes from Astrocytes in the Injured Mouse Cerebral Cortex.
Mattugini N, Bocchi R, Scheuss V, Russo GL, Torper O, Lao CL, Götz M
Neuron (2019) : . . **IHC; tested species: mouse**

iPSC-derived models of PACS1 syndrome reveal transcriptional and functional deficits in neuron activity.
Rylaarsdam L, Rakotomamonjy J, Pope E, Guemez-Gamboa A
Nature communications (2024) 151: 827. . **IHC; tested species: human**

KCNJ2 inhibition mitigates mechanical injury in a human brain organoid model of traumatic brain injury.
Lai JD, Berlind JE, Fricklas G, Lie C, Urenda JP, Lam K, Sta Maria N, Jacobs R, Yu V, Zhao Z, Ichida JK, et al.
Cell stem cell (2024) 314: 519-536.e8. . **IHC; tested species: human**

Single-cell transcriptomic analysis reveals diversity within mammalian spinal motor neurons.
Liau ES, Jin S, Chen YC, Liu WS, Calon M, Nedelec S, Nie Q, Chen JA
Nature communications (2023) 141: 46. . **IHC; tested species: mouse**

MicroRNAs mediate precise control of spinal interneuron populations to exert delicate sensory-to-motor outputs.
Chang SH, Su YC, Chang M, Chen JA
eLife (2021) 10: . . **IHC; tested species: mouse**

A single-cell transcriptomic and anatomic atlas of mouse dorsal raphe Pet1 neurons.
Okaty BW, Sturrock N, Escobedo Lozoya Y, Chang Y, Senft RA, Lyon KA, Alekseyenko OV, Dymecki SM
eLife (2020) 9: . . **IHC; tested species: mouse**

Selected General References

Unc5C and DCC act downstream of Ctip2 and Satb2 and contribute to corpus callosum formation.
Srivatsa S et al. Nat Commun (2014) PubMed:24739528

The CB(1) cannabinoid receptor drives corticospinal motor neuron differentiation through the Ctip2/Satb2 transcriptional regulation axis.
Díaz-Alonso J et al. J. Neurosci. (2012) PubMed:23175820

The sympathetic neurotransmitter switch depends on the nuclear matrix protein Satb2.
Apostolova G et al. J. Neurosci. (2010) PubMed:21123581

SATB2 interacts with chromatin-remodeling molecules in differentiating cortical neurons.
Gyorgy AB et al. Eur. J. Neurosci. (2008) PubMed:18333962

Access the online factsheet including applicable protocols at https://sysy.com/product/327004 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.