SYSY Antibodies

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Calbindin D28k

Cat.No. 214 011; Monoclonal mouse antibody, 100 µg purified IgG (lyophilized)

Data Sheet

Reconstitution/ Storage	100 µg purified IgG, lyophilized. Albumin and azide were added for stabilization. For **reconstitution** add 100 µl H_2O to get a 1mg/ml solution in PBS. Then aliquot and store at -20°C to -80°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 : 200 up to 1 : 500 **IHC-P**: 1 : 500 up to 1 : 1000 **Clarity**: external data (see remarks)
Clone	351C10
Subtype	IgG1 (κ light chain)
Immunogen	Full-length recombinant human Calbindin D28k protein (UniProt Id: P05937)
Reactivity	Reacts with: human (P05937), rat (P07171), mouse (P12658), zebrafish, grashopper. Other species not tested yet.
Matching control	214-0P
Remarks	**Clarity**: This antibody has been successfully used for CLARITY application in human brain (Woelfle et al., 2023; PMID: 37221592).

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

Background

Calbindin D28k (CALB1, D28K or CAB27) and Calretinin (Calbindin D29k) are members of the EF-hand calcium-binding protein family, playing essential roles in intracellular calcium homeostasis, neuroprotection, and signal transduction (1). Calbindin D28k is widely expressed in tissues that experience high calcium influx, such as the brain, sensory organs, endocrine tissues, and the enteric nervous system (ENS). In the central nervous system (CNS), Calbindin D28k is an important marker for specific neuronal populations, particularly in Purkinje cells of the cerebellum and GABAergic and glutamatergic neurons of the cortex (2). Outside the CNS, Calbindin D28k plays crucial roles in non-neuronal tissues. In the retina, it contributes to photoreceptor function and calcium signaling (3). In the pancreas, it is present in α- and β-cells (4). Additionally, it was reported that 31% of myenteric neurons and up to 95% of submucosal neurons in the human ENS express calbindin, suggesting its involvement in both motor and secretory functions (5).

Selected References for 214 011

Combinatorial analysis of calcium-binding proteins in larval and adult zebrafish primary olfactory system identifies differential olfactory bulb glomerular projection fields.
Kress S, Biechl D, Wullimann MF
Brain structure & function (2015) 2204: 1951-70. . **IHC, WB; tested species: zebrafish**

CLARITY increases sensitivity and specificity of fluorescence immunostaining in long-term archived human brain tissue.
Woelfle S, Deshpande D, Feldengut S, Braak H, Del Tredici K, Roselli F, Deisseroth K, Michaelis J, Boeckers TM, Schön M
BMC biology (2023) 211: 113. . **CLARITY; tested species: human**

Inhibition of West Nile virus by calbindin-D28k.
Siddharthan V, Wang H, Davies CJ, Hall JO, Morrey JD
PloS one (2014) 99: e106535. . **FACS**

INSIHGT: an accessible multi-scale, multi-modal 3D spatial biology platform.
Yau CN, Hung JTS, Campbell RAA, Wong TCY, Huang B, Wong BTY, Chow NKN, Zhang L, Tsoi EPL, Tan Y, Li JJX, et al.
Nature communications (2024) 151: 10888. . **IHC; tested species: mouse**

A pupillary contrast response in mice and humans: Neural mechanisms and visual functions.
Fitzpatrick MJ, Krizan J, Hsiang JC, Shen N, Kerschensteiner D
Neuron (2024) : . . **IHC; tested species: mouse**

Expression profiles of the autism-related SHANK proteins in the human brain.
Woelfle S, Pedro MT, Wagner J, Schön M, Boeckers TM
BMC biology (2023) 211: 254. . **CLARITY; tested species: human**

Sensory innervation of masseter, temporal and lateral pterygoid muscles in common marmosets.
Hovhannisyan AH, Lindquist K, Belugin S, Mecklenburg J, Ibrahim T, Tram M, Corey T, Salmon A, Ruparel S, Ruparel S, Akopian A, et al.
bioRxiv : the preprint server for biology (2023) : . . **IHC; tested species: marmoset**

The Ser19Stop single nucleotide polymorphism (SNP) of human PHYHIPL affects the cerebellum in mice.
Sugimoto H, Horii T, Hirota JN, Sano Y, Shinoda Y, Konno A, Hirai H, Ishizaki Y, Hirase H, Hatada I, Furuichi T, et al.
Molecular brain (2021) 141: 52. . **IHC; tested species: mouse**

Long-Term Effects of Biliverdin Reductase a Deficiency in Ugt1-/- Mice: Impact on Redox Status and Metabolism.
Bortolussi G, Shi X, Ten Bloemendaal L, Banerjee B, De Waart DR, Baj G, Chen W, Oude Elferink RP, Beuers U, Paulusma CC, Stocker R, et al.
Antioxidants (Basel, Switzerland) (2021) 1012: . . **IHC; tested species: mouse**

Regional Variation of Gap Junctional Connections in the Mammalian Inner Retina.
Fusz K, Kovács-Öller T, Kóbor P, Szabó-Meleg E, Völgyi B, Buzás P, Telkes I
Cells (2021) 109: . . **IHC; tested species: mouse,rat**

Access the online factsheet including applicable protocols at https://sysy.com/product/214011 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.