SYSY Antibodies

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Ca2+ channel P/Q-type α-1A

Cat.No. 152 103; Polyclonal rabbit antibody, 50 µg specific antibody (lyophilized)

Data Sheet

Reconstitution/ Storage	50 µg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin was added for stabilization. For **reconstitution** add 50 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) (see remarks) **IP**: not tested yet **ICC**: 1 : 500 up to 1 : 5000 **IHC**: not recommended **IHC-P**: not tested yet **IHC-Fr**: 1 : 500 (see remarks)
Immunogen	Recombinant protein corresponding to AA 856 to 888 from mouse Ca2+ channel P/Q-type α-1A (Cav2.1) (UniProt Id: P97445)
Reactivity	Reacts with: rat (P54282), mouse (P97445). Other species not tested yet.
Specificity	K.O. validated PubMed: 22701595
Remarks	**WB**: To avoid protein aggregation, do not heat samples for SDS-PAGE. Due to the large size of this protein, we recommend NuPAGE 3-8% Tris-Acetate gels for SDS-PAGE. **IHC-Fr**: The following fixatives are possible: 4% formaldehyde/PFA, acetone.

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

Background

Voltage **g**ated **c**alcium **c**hannels (VGCCs), also referred to as voltage sensitive calcium channels (VSCCs), are present in most excitable cells. They mediate the influx of Ca^{2+} ions into the cell and trigger the release of neurotransmitters or hormons but are also involved in other calcium dependent processes like metabolism, cell proliferation and cell death.
VGCCs are composed of four subunits (α-1, α-2, β and δ) in a 1:1:1:1 ratio. The α-1A isoform occurs in VGCCs of the **P/Q-type** while isoform α-1B is found in the N-type. Both belong to the high voltage activated group (hva).

Selected References for 152 103

P/Q Type Calcium Channel Cav2.1 Defines a Unique Subset of Glomeruli in the Mouse Olfactory Bulb.
Pyrski M, Tusty M, Eckstein E, Oboti L, Rodriguez-Gil DJ, Greer CA, Zufall F
Frontiers in cellular neuroscience (2018) 12: 295. . **IHC, EM; tested species: mouse**

α2δ expression sets presynaptic calcium channel abundance and release probability.
Hoppa MB, Lana B, Margas W, Dolphin AC, Ryan TA
Nature (2012) 4867401: 122-5. . **ICC**

Delayed postnatal loss of P/Q-type calcium channels recapitulates the absence epilepsy, dyskinesia, and ataxia phenotypes of genomic Cacna1a mutations.
Mark MD, Maejima T, Kuckelsberg D, Yoo JW, Hyde RA, Shah V, Gutierrez D, Moreno RL, Kruse W, Noebels JL, Herlitze S, et al.
The Journal of neuroscience : the official journal of the Society for Neuroscience (2011) 3111: 4311-26. . **WB**

Suggestion of creatine as a new neurotransmitter by approaches ranging from chemical analysis and biochemistry to electrophysiology.
Bian X, Zhu J, Jia X, Liang W, Yu S, Li Z, Zhang W, Rao Y
eLife (2023) 12: . . **WB; tested species: mouse**

Synaptic NMDA receptor signalling controls R-type calcium channel recruitment.
Feng Z, Glebov OO
The European journal of neuroscience (2021) : . . **ICC; tested species: rat**

Rapid purification and metabolomic profiling of synaptic vesicles from mammalian brain.
Chantranupong L, Saulnier JL, Wang W, Jones DR, Pacold ME, Sabatini BL
eLife (2020) 9: . . **WB; tested species: mouse**

Selected Ionotropic Receptors and Voltage-Gated Ion Channels: More Functional Competence for Human Induced Pluripotent Stem Cell (iPSC)-Derived Nociceptors.
Schoepf CL, Zeidler M, Spiecker L, Kern G, Lechner J, Kummer KK, Kress M
Brain sciences (2020) 106: . . **ICC; tested species: human,mouse**

Transient Confinement of CaV2.1 Ca2+-Channel Splice Variants Shapes Synaptic Short-Term Plasticity.
Heck J, Parutto P, Ciuraszkiewicz A, Bikbaev A, Freund R, Mitlöhner J, Alonso M, Fejtova A, Holcman D, Heine M
Neuron (2019) : . . **ICC; tested species: human**

Bicistronic CACNA1A Gene Expression in Neurons Derived from Spinocerebellar Ataxia Type 6 Patient-Induced Pluripotent Stem Cells.
Bavassano C, Eigentler A, Stanika R, Obermair GJ, Boesch S, Dechant G, Nat R
Stem cells and development (2017) 2622: 1612-1625. . **ICC; tested species: human**

Nanoscale Structural Plasticity of the Active Zone Matrix Modulates Presynaptic Function.
Glebov OO, Jackson RE, Winterflood CM, Owen DM, Barker EA, Doherty P, Ewers H, Burrone J
Cell reports (2017) 1811: 2715-2728. . **ICC**

Alternative Splicing of P/Q-Type Ca2+ Channels Shapes Presynaptic Plasticity.
Thalhammer A, Contestabile A, Ermolyuk YS, Ng T, Volynski KE, Soong TW, Goda Y, Cingolani LA
Cell reports (2017) 202: 333-343. . **ICC; tested species: rat**

Access the online factsheet including applicable protocols at https://sysy.com/product/152103 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.