

Ca²⁺ channel P/Q-type α -1A

Cat.No. 152 203; Polyclonal rabbit antibody, 50 μ g specific antibody (lyophilized)

Data Sheet

Reconstitution/Storage	50 μ g specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were added for stabilization. For reconstitution add 50 μ l H ₂ O 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 (see remarks) IP: not tested yet ICC: 1 : 500 up to 1 : 1000 IHC: 1 : 500 (see remarks) IHC-P: not tested yet ExM: 1 : 100 (see remarks) DNA-PAINT: yes (see remarks) EM: yes
Immunogen	Recombinant protein corresponding to AA 1921 to 2212 from rat Ca ²⁺ channel P/Q-type α -1A (Cav2.1) (UniProt Id: P54282)
Reactivity	Reacts with: rat (P54282), mouse (P97445). Other species not tested yet.
Specificity	K.O. validated PubMed: 27537483
Remarks	WB: Due to its large size, this antibody requires special gel-electrophoresis and Western blot protocols for visualization by immunoblotting. Excellent results can be obtained with the 4-12% TRIS-glycine gradient gels of anamed or NuPage TRIS-acetate gels from Invitrogen. Ca ²⁺ channel P/Q-type α -1A aggregates after boiling, making it necessary to run SDS-PAGE with non-boiled samples. IHC: Tissue sections require additional antigen retrieval with 95% methanol, 5% acetic acid prior to antibody incubation. For details see Dumoulin A, Triller A & Dieudonné S (2001) . ExM: This antibody has been successfully used for the magnified analysis of the proteome (MAP) expansion microscopy method (MAP; Ku et al. 2016. Nature Biotechnology 34:973-981) DNA-PAINT: This antibody has been successfully used for DNA-PAINT application (see Unterauer et al., 2024; PMID: 38552614).

Background

Voltage gated calcium channels (VGCCs), also referred to as voltage sensitive calcium channels (VSCCs), are present in most excitable cells. They mediate the influx of Ca²⁺ ions into the cell and trigger the release of neurotransmitters or hormones 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 152 203

- α -Neurexins Together with α 2 δ -1 Auxiliary Subunits Regulate Ca²⁺ Influx through Cav2.1 Channels. Brockhaus J, Schreitmüller M, Repetto D, Klatt O, Reissner C, Elmslie K, Heine M, Missler M The Journal of neuroscience : the official journal of the Society for Neuroscience (2018) 3838: 8277-8294. . **WB, ICC; tested species: mouse**
- Molecular definition of distinct active zone protein machineries for Ca²⁺ channel clustering and synaptic vesicle priming. Emperador-Melero J, Andersen JW, Metzbowler SR, Levy AD, Dharmasri PA, de Nola G, Blanpied TA, Kaeser PS bioRxiv : the preprint server for biology (2023) : . . **ICC, DNA_PAINT; tested species: mouse**
- The intracellular C-terminus confers compartment-specific targeting of voltage-gated calcium channels. Chin M, Kaeser PS Cell reports (2024) 437: 114428. . **WB, ICC; KO verified; tested species: mouse**
- Distinct active zone protein machineries mediate Ca²⁺ channel clustering and vesicle priming at hippocampal synapses. Emperador-Melero J, Andersen JW, Metzbowler SR, Levy AD, Dharmasri PA, de Nola G, Blanpied TA, Kaeser PS Nature neuroscience (2024) 279: 1680-1694. . **DNA_PAINT, ICC; tested species: mouse**
- The intracellular C-terminus confers compartment-specific targeting of voltage-gated Ca²⁺ channels. Chin M, Kaeser PS bioRxiv : the preprint server for biology (2023) : . . **WB, ICC; KO verified; tested species: mouse**
- PRRT2 modulates presynaptic Ca²⁺ influx by interacting with P/Q-type channels. Ferrante D, Sterlini B, Prestigio C, Marte A, Corradi A, Onofri F, Tortorolo G, Vicidomini G, Petretto A, Muià J, Thalhammer A, et al. Cell reports (2021) 3511: 109248. . **WB, ICC; tested species: mouse**
- RIM-BP2 regulates Ca²⁺ channel abundance and neurotransmitter release at hippocampal mossy fiber terminals. Miyano R, Sakamoto H, Hirose K, Sakaba T eLife (2024) 12: . . **IHC_FR; tested species: mouse**
- RIM-binding protein 2 regulates release probability by fine-tuning calcium channel localization at murine hippocampal synapses. Grauel MK, Maglione M, Reddy-Alla S, Willmes CG, Brockmann MM, Trimbuch T, Rosenmund T, Pangalos M, Vardar G, Stumpf A, Walter AM, et al. Proceedings of the National Academy of Sciences of the United States of America (2016) 11341: 11615-11620. . **IHC; tested species: mouse**
- Release probability of hippocampal glutamatergic terminals scales with the size of the active zone. Holderith N, Lorincz A, Katona G, Rózsa B, Kulik A, Watanabe M, Nusser Z Nature neuroscience (2012) 157: 988-97. . **EM**
- A biallelic mutation in CACNA2D2 associated with developmental and epileptic encephalopathy affects calcium channel-dependent as well as synaptic functions of α 2 δ -2. Haddad S, Ablinger C, Stanika R, Hessenberger M, Campiglio M, Ortner NJ, Tuluc P, Obermair GJ Journal of neurochemistry (2025) 1691: e16197. . **ICC; tested species: mouse**
- Periodic ER-plasma membrane junctions support long-range Ca²⁺ signal integration in dendrites. Benedetti L, Fan R, Weigel AV, Moore AS, Houlihan PR, Kittisopikul M, Park G, Petrucchio A, Hubbard PM, Pang S, Xu CS, et al. Cell (2025) 1882: 484-500.e22. . **ICC; tested species: rat**

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

Access the online factsheet including applicable protocols at <https://sysy.com/product/152203> 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.