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Ca2+ channel P/Q-type α-1A

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

Data Sheet

Reconstitution/ Storage	50 μg specific antibody, lyophilized. Affinity purified with the immunogen. Albumin and azide were added for stabilization. For reconstitution add 50 μl 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 IP: not tested yet ICC: 1 : 500 up to 1 : 1000 IHC: 1 : 500 (see remarks) IHC-P: not tested yet EXM: external data (see remarks) DNA-PAINT: external data (see remarks) EM: external data (see remarks)
Immunogen	Recombinant protein corresponding to AA 1921 to 2212 from rat Ca2+ 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: 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: Antigen retrieval with methanol/acetic acid is required. For details see <u>Dumoulin A, Triller A & Dieudonné S (2001)</u>. 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; <u>PMID: 38552614</u>). EM: This antibody has been successfully used for electron microscopy according to Holderith et al. 2012.

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 Ca²⁺ 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 152 203

a-Neurexins Together with a2δ-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, Metzbower 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, Metzbower 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, Tortarolo 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**

Protocol for SUM-PAINT spatial proteomic imaging generating neuronal architecture maps in rat hippocampal neurons. Unterauer EM, Schentarra EM, Jevdokimenko K, Boushehri SS, Marr C, Opazo F, Fornasiero EF, Jungmann R STAR protocols (2025) 61: 103637. **DNA_PAINT; tested species: rat**

A biallelic mutation in CACNA2D2 associated with developmental and epileptic encephalopathy affects calcium channeldependent as well as synaptic functions of $\alpha 2\delta$ -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**



Access the online factsheet including applicable protocols at <u>https://sysy.com/product/152203</u> 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 freezedried) 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 freezethaw cycles.
- Please refer to our **tips and hints for subsequent storage** of reconstituted antibodies and control peptides and proteins.