SYSY Antibodies

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Kv3.1b

Cat.No. 242 003; 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_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**: not tested yet **EM**: yes
Immunogen	Synthetic peptide corresponding to AA 567 to 585 from mouse Kv3.1b (UniProt Id: P15388)
Reactivity	Reacts with: human (P48547), rat (P25122), mouse (P15388), cow. No signal: zebrafish. Other species not tested yet.
Specificity	K.O. PubMed: 35510987
Matching control	242-0P

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

Background

Voltage-gated potassium (Kv) channels regulate many aspects of neuronal excitability like shaping of action potentials or modulating spike patterns.
Mammalian neurons express more than 20 different Kv subunits that can be subdivided into 12 families. Heteromeric assembly of 4 subunits and differential phosphorylation of Kv channels gives rise to a huge molecular and functional diversity.
The related proteins Kv3.1 - Kv3.4 form the Shaw-type subfamily. **Kv3.1b**, also known as **Kcnc 1**, is highly enriched in neurons that fire at high frequencies such as fast spiking (FS) interneurons of the cortex and hippocampus and neurons in the globus pallidus.

Selected References for 242 003

Variability in the Munc13-1 content of excitatory release sites.
Karlocai MR, Heredi J, Benedek T, Holderith N, Lorincz A, Nusser Z
eLife (2021) 10: . . **EM; tested species: mouse**

A High-Resolution Method for Quantitative Molecular Analysis of Functionally Characterized Individual Synapses.
Holderith N, Heredi J, Kis V, Nusser Z
Cell reports (2020) 324: 107968. . **IHC; tested species: rat**

HCN channels at the cell soma ensure the rapid electrical reactivity of fast-spiking interneurons in human neocortex.
Szegedi V, Bakos E, Furdan S, Kovács BH, Varga D, Erdélyi M, Barzó P, Szücs A, Tamás G, Lamsa K
PLoS biology (2023) 212: e3002001. . **IHC; tested species: human,mouse**

Different priming states of synaptic vesicles underlie distinct release probabilities at hippocampal excitatory synapses.
Aldahabi M, Balint F, Holderith N, Lorincz A, Reva M, Nusser Z
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Kv3.3 subunits control presynaptic action potential waveform and neurotransmitter release at a central excitatory synapse.
Richardson A, Ciampani V, Stancu M, Bondarenko K, Newton S, Steinert JR, Pilati N, Graham BP, Kopp-Scheinpflug C, Forsythe ID
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Selected General References

Precise localization of the voltage-gated potassium channel subunits Kv3.1b and Kv3.3 revealed in the molecular layer of the rat cerebellar cortex by a pre-embedding immunogold method.
Puente N, Mendizabal-Zubiaga J, Elezgarai I, Reguero L, Buceta I, Grandes P
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Quantitative analysis of neurons with Kv3 potassium channel subunits, Kv3.1b and Kv3.2, in macaque primary visual cortex.
Constantinople CM, Disney AA, Maffie J, Rudy B, Hawken MJ
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Subcellular localization of the voltage-gated potassium channels Kv3.1b and Kv3.3 in the cerebellar dentate nucleus of glutamic acid decarboxylase 67-green fluorescent protein transgenic mice.
Alonso-Espinaco V, Elezgarai I, Díez-García J, Puente N, Knöpfel T, Grandes P
Neuroscience (2008) 1554: 1059-69. .

Brain-derived neurotrophic factor controls functional differentiation and microcircuit formation of selectively isolated fast-spiking GABAergic interneurons.
Berghuis P, Dobszay MB, Sousa KM, Schulte G, Mager PP, Härtig W, Görcs TJ, Zilberter Y, Ernfors P, Harkany T
The European journal of neuroscience (2004) 205: 1290-306. .

Perineuronal nets in the rat medial nucleus of the trapezoid body surround neurons immunoreactive for various amino acids, calcium-binding proteins and the potassium channel subunit Kv3.1b.
Härtig W, Singer A, Grosche J, Brauer K, Ottersen OP, Brückner G
Brain research (2001) 8991-2: 123-33. .

Access the online factsheet including applicable protocols at https://sysy.com/product/242003 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.