SYSY Antibodies

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Kv2.1

Cat.No. 231 002; Polyclonal rabbit antibody, 200 µl antiserum (lyophilized)

Data Sheet

Reconstitution/ Storage	200 µl antiserum, lyophilized. For **reconstitution** add 200 µl H_2O, then aliquot and store at -20°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**: not tested yet **IHC-P (FFPE)**: not tested yet
Immunogen	Recombinant protein corresponding to AA 532 to 857 from rat Kv2.1 (UniProt Id: P15387)
Reactivity	Reacts with: rat (P15387), mouse (Q03717). Other species not tested yet.
Matching control	231-0P

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 of spike patterns.
Mammalian neurons express more than 20 different Kv subunits that can be subdivided into 12 families. Heteromeric assembly of four subunits and differential phosphorylation of Kv channels give rise to a huge molecular and functional diversity.
The Kv 2 subfamily comprising **Kv 2.1** (DRK 1, Kcnb 1) and **Kv 2.2** (CDRK, Kcnb 2) is a unique exception since they do not form heterodimers. Kv 2.1 is found in large clusters on the soma and proximal dendrites of pyramidal neurons.

Selected References for 231 002

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Cell reports. Medicine (2024) 511: 101789. . **WB; tested species: mouse**

Microglia monitor and protect neuronal function through specialized somatic purinergic junctions.
Cserép C, Pósfai B, Lénárt N, Fekete R, László ZI, Lele Z, Orsolits B, Molnár G, Heindl S, Schwarcz AD, Ujvári K, et al.
Science (New York, N.Y.) (2020) 3676477: 528-537. . **IHC; tested species: mouse**

Selected General References

Formation of heteromeric Kv2 channels in mammalian brain neurons.
Kihira Y et al. J. Biol. Chem. (2010) PubMed:20202934

Immunolocalization of the voltage-gated potassium channel Kv2.2 in GABAergic neurons in the basal forebrain of rats and mice.
Hermanstyne TO et al. J. Comp. Neurol. (2010) PubMed:20853508

Intracellular regions of potassium channels: Kv2.1 and heag.
Wray D et al. Eur. Biophys. J. (2009) PubMed:18607586

Glutamate transporters regulate extrasynaptic NMDA receptor modulation of Kv2.1 potassium channels.
Mulholland PJ et al. J. Neurosci. (2008) PubMed:18753382

Target soluble N-ethylmaleimide-sensitive factor attachment protein receptors (t-SNAREs) differently regulate activation and inactivation gating of Kv2.2 and Kv2.1: Implications on pancreatic islet cell Kv channels.
Wolf-Goldberg T et al. Mol. Pharmacol. (2006) PubMed:16754785

Molecular rearrangements of the Kv2.1 potassium channel termini associated with voltage gating.
Kobrinsky E et al. J. Biol. Chem. (2006) PubMed:16690619

Kv2.1 potassium channels are retained within dynamic cell surface microdomains that are defined by a perimeter fence.
O'Connell KM et al. J. Neurosci. (2006) PubMed:16988031

Graded regulation of the Kv2.1 potassium channel by variable phosphorylation.
Park KS et al. Science (2006) PubMed:16917065

A novel targeting signal for proximal clustering of the Kv2.1 K+ channel in hippocampal neurons.
Lim ST et al. Neuron (2000) PubMed:10719893

Phosphorylation of the Kv2.1 K+ channel alters voltage-dependent activation.
Murakoshi H et al. Mol. Pharmacol. (1997) PubMed:9351973

Expression of Kv2.1 delayed rectifier K+ channel isoforms in the developing rat brain.
Trimmer JS et al. FEBS Lett. (1993) PubMed:8508921

CDRK and DRK1 K+ channels have contrasting localizations in sensory systems.
Hwang PM et al. Neuroscience (1993) PubMed:8413924

Access the online factsheet including applicable protocols at https://sysy.com/product/231002 or scan the QR-code.

FAQ - How should I store my antibody?

Shipping Conditions

- All SYSY antibodies and control proteins/peptides are shipped lyophilized (vacuum freeze-dried). In this form, they remain stable 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. **Do not freeze lyophilized antibodies**. Temperatures below 0°C may impair performance.
- **Fluorescence-labeled antibodies** should be reconstituted immediately upon receipt. Long-term storage of lyophilized fluorophore-conjugates may cause aggregation.
- **Control peptides** should be stored at -20°C before reconstitution.

Long Term Storage after Reconstitution (General Considerations)

- **Do not use frost-free ("no-frost") freezers.** These units periodically warm to remove ice buildup, causing freeze–thaw cycles that can damage antibodies.
- Store vials in areas with minimal temperature fluctuation - preferably toward the back of the freezer, not on the door.
- Aliquot reconstituted antibodies and store at –20°C to –80°C.
- Avoid very small aliquots (<20 µL), as evaporation and adsorption to tube surfaces can reduce antibody concentration and activity.
- Use the smallest practical storage vial to minimize surface area.
- Adding glycerol to a final concentration of 50% prevents freezing at -20°C, allowing storage in liquid form and effectively avoiding freeze–thaw cycles.

Product Specific Hints for Storage

Control proteins / peptides

- Store at -20°C to -80°C

Monoclonal Antibodies

- **Ascites and hybridoma supernatant:** Store at -20°C to -80°C
  Prolonged storage at 4°C is not recommended, as proteases present in ascites may degrade antibodies.
- **Purified IgG:** Store at -20°C to -80°C
  Adding a carrier protein (e.g., BSA) enhances long-term stability.
  Many SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Polyclonal Antibodies

- **Crude antisera:** Can be stored at 4°C with antimicrobials added, but -20°C to -80°C is preferred
- **Affinity-purified antibodies:** Less stable than antisera; store at -20°C to -80°C
  Adding a carrier protein such as BSA improves long-term stability.
  Most SYSY antibodies already contain carrier proteins - refer to the respective datasheet for details.

Fluorescence-labeled Antibodies

- Store as a liquid with 1:1 (v/v) glycerol at -20°C, and protect from light exposure

Avoid repeated freeze-thaw cycles for all antibodies!

FAQ - How should I reconstitute my antibody?

Reconstitution

- All purified SYSY antibodies are lyophilized from PBS. To reconstitute the antibody in PBS, add the volume of deionized water specified in the corresponding datasheet. If a larger final volume is desired, first add the recommended amount of water, then adjust with PBS and, if needed, add a stabilizing carrier protein (e.g., BSA) to a final concentration of 2%. Some SYSY antibodies already contain albumin; please take this into account before adding additional carrier protein.

For complete reconstitution, carefully remove the vial cap. After adding water, briefly vortex the solution. To collect the liquid at the bottom of the vial, place the vial inside a 50 ml centrifuge tube padded with paper and centrifuge briefly.

- If desired, small amounts of azide or thimerosal may be added to prevent microbial growth. This is particularly recommended when storing an aliquot at 4°C.
- After reconstitution of fluorescence-labeled antibodies, add glycerol 1:1 (v/v) to achieve a final concentration of 50%. This prevents freezing at –20°C and keeps the antibody in liquid form, effectively avoiding freeze–thaw cycles.
- Glycerol may also be added to unlabeled primary antibodies as a general measure to prevent freeze–thaw damage.
- For further guidance, please refer to our **storage tips** and recommendations for reconstituted antibodies, control peptides, and control proteins.