

## Kv2.1

Cat.No. 231-0P; control protein, 100 µg protein (lyophilized)

### Data Sheet

Reconstitution/ Storage	100 µg protein, lyophilized. For <b>reconstitution</b> add 100 µl H <sub>2</sub> O to get a 1mg/ml solution in TBS. Then aliquot and store at -20°C to -80°C until use. Control proteins should be stored at +4°C when still lyophilized. Do not freeze! For detailed information, see back of the data sheet.
Immunogen	Recombinant protein corresponding to AA 532 to 857 from rat Kv2.1 (UniProt Id: P15387)
Recommended dilution	Optimal concentrations should be determined by the end-user.
Matching antibodies	231 002
Remarks	This control protein consists of the recombinant mouse Kv 2.1 (aa 532 - 857) that has been used for immunization. It has been tested in preadsorption experiments and blocks efficiently and specifically the corresponding signal in Western blots. The amount of protein needed for efficient blocking depends on the titer and on the affinity of the antibody to the antigen.

**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, Kcnc 1) and **Kv 2.2** (CDRK, Kcnc 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 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.  
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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.  
Kobrinisky 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<sup>+</sup> channel in hippocampal neurons.  
Lim ST et al. Neuron (2000) PubMed:10719893

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

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

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

Heterologous expression of the human potassium channel Kv2.1 in clonal mammalian cells by direct cytoplasmic microinjection of cRNA.  
Ikeda SR et al. Pflugers Arch. (1992) PubMed:1283219

Access the online factsheet including applicable protocols at <https://sysy.com/product/231-0P> 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.