

**KCNA2 Antibody (C-term) Blocking Peptide**  
**Synthetic peptide**  
**Catalog # BP14749b****Specification**

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**KCNA2 Antibody (C-term) Blocking Peptide - Product Information**Primary Accession [P16389](#)**KCNA2 Antibody (C-term) Blocking Peptide - Additional Information****Gene ID** 3737**Other Names**

Potassium voltage-gated channel subfamily A member 2, NGK1, Voltage-gated K(+) channel HuKIV, Voltage-gated potassium channel HBK5, Voltage-gated potassium channel subunit Kv12, KCNA2

**Format**

Peptides are lyophilized in a solid powder format. Peptides can be reconstituted in solution using the appropriate buffer as needed.

**Storage**

Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C.

**Precautions**

This product is for research use only. Not for use in diagnostic or therapeutic procedures.

**KCNA2 Antibody (C-term) Blocking Peptide - Protein Information****Name** KCNA2**Function**

Voltage-gated potassium channel that mediates transmembrane potassium transport in excitable membranes, primarily in the brain and the central nervous system, but also in the cardiovascular system. Prevents aberrant action potential firing and regulates neuronal output. Forms tetrameric potassium-selective channels through which potassium ions pass in accordance with their electrochemical gradient. The channel alternates between opened and closed conformations in response to the voltage difference across the membrane (PubMed:<a href="http://www.uniprot.org/citations/19912772" target="\_blank">19912772</a>, PubMed:<a href="http://www.uniprot.org/citations/8495559" target="\_blank">8495559</a>, PubMed:<a href="http://www.uniprot.org/citations/11211111" target="\_blank">11211111</a>, PubMed:<a href="http://www.uniprot.org/citations/23769686" target="\_blank">23769686</a>). Can form functional homotetrameric channels and heterotetrameric channels that contain variable proportions of KCNA1, KCNA2, KCNA4, KCNA5, KCNA6, KCNA7, and possibly other family members as well; channel properties depend on the type of alpha subunits that are part of the channel (PubMed:<a href="http://www.uniprot.org/citations/8495559" target="\_blank">8495559</a>, PubMed:<a href="http://www.uniprot.org/citations/20220134" target="\_blank">20220134</a>). Channel properties are modulated by cytoplasmic beta subunits that regulate the subcellular

location of the alpha subunits and promote rapid inactivation of delayed rectifier potassium channels. In vivo, membranes probably contain a mixture of heteromeric potassium channel complexes, making it difficult to assign currents observed in intact tissues to any particular potassium channel family member. Homotetrameric KCNA2 forms a delayed-rectifier potassium channel that opens in response to membrane depolarization, followed by slow spontaneous channel closure (PubMed:<a href="http://www.uniprot.org/citations/19912772" target="\_blank">19912772</a>, PubMed:<a href="http://www.uniprot.org/citations/23769686" target="\_blank">23769686</a>). In contrast, a heteromultimer formed by KCNA2 and KCNA4 shows rapid inactivation (PubMed:<a href="http://www.uniprot.org/citations/8495559" target="\_blank">8495559</a>). Regulates neuronal excitability and plays a role as pacemaker in the regulation of neuronal action potentials (By similarity). KCNA2- containing channels play a presynaptic role and prevent hyperexcitability and aberrant action potential firing (By similarity). Response to toxins that are selective for KCNA2-containing potassium channels suggests that in Purkinje cells, dendritic subthreshold KCNA2- containing potassium channels prevent random spontaneous calcium spikes, suppressing dendritic hyperexcitability without hindering the generation of somatic action potentials, and thereby play an important role in motor coordination (By similarity). Plays a role in the induction of long-term potentiation of neuron excitability in the CA3 layer of the hippocampus (By similarity). May function as down-stream effector for G protein-coupled receptors and inhibit GABAergic inputs to basolateral amygdala neurons (By similarity). May contribute to the regulation of neurotransmitter release, such as gamma-aminobutyric acid (GABA) (By similarity). Contributes to the regulation of the axonal release of the neurotransmitter dopamine (By similarity). Reduced KCNA2 expression plays a role in the perception of neuropathic pain after peripheral nerve injury, but not acute pain (By similarity). Plays a role in the regulation of the time spent in non-rapid eye movement (NREM) sleep (By similarity).

#### **Cellular Location**

Cell membrane; Multi-pass membrane protein {ECO:0000250|UniProtKB:P63142, ECO:0000305}. Membrane {ECO:0000250|UniProtKB:P63142}. Cell projection, axon. Synapse {ECO:0000250|UniProtKB:P63142} Endoplasmic reticulum membrane {ECO:0000250|UniProtKB:P63142}. Cell projection, lamellipodium membrane {ECO:0000250|UniProtKB:P63142} Synapse, synaptosome {ECO:0000250|UniProtKB:P63141}. Presynaptic cell membrane {ECO:0000250|UniProtKB:P63141}. Cell projection, dendrite {ECO:0000250|UniProtKB:P63141}. Cell junction, paranodal septate junction {ECO:0000250|UniProtKB:P63141}. Note=KCNA2 by itself is detected both at the endoplasmic reticulum and at the cell membrane Coexpression with KCNA4 or with beta subunits promotes expression at the cell membrane. Coexpression with KCNA1 inhibits cell surface expression. In myelinated peripheral axons, clustered in the juxtaparanodal region and at an internodal line located along the mesaxon and below the Schmidt-Lanterman incisures (By similarity) {ECO:0000250|UniProtKB:P63141, ECO:0000250|UniProtKB:P63142}

#### **Tissue Location**

Detected in brain cortex (PubMed:16473933). Detected in peroneal nerve in the juxtaparanodal regions of the node of Ranvier; expression is decreased in patients with diabetes mellitus that suffer from axonal neuropathy (PubMed:22649228). Detected in paranodal and juxtanodal zones in myelinated spinal cord (at protein level) (PubMed:11086297).

#### **KCNA2 Antibody (C-term) Blocking Peptide - Protocols**

Provided below are standard protocols that you may find useful for product applications.

- [Blocking Peptides](#)

#### **KCNA2 Antibody (C-term) Blocking Peptide - Images**

#### **KCNA2 Antibody (C-term) Blocking Peptide - Background**

Potassium channels represent the most complex class of voltage-gated ion channels from both functional and structural standpoints. Their diverse functions include regulating neurotransmitter release, heart rate, insulin secretion, neuronal excitability, epithelial electrolyte transport, smooth muscle contraction, and cell volume. Four sequence-related potassium channel genes - shaker, shaw, shab, and shal - have been identified in *Drosophila*, and each has been shown to have a human homolog(s). This gene encodes a member of the potassium channel, voltage-gated, shaker-related subfamily. This member contains six membrane-spanning domains with a shaker-type repeat in the fourth segment. It belongs to the delayed rectifier class, members of which allow nerve cells to efficiently repolarize following an action potential. The coding region of this gene is intronless, and the gene is clustered with genes *KCNA3* and *KCNA10* on chromosome 1.

#### **KCNA2 Antibody (C-term) Blocking Peptide - References**

Denning, E.J., et al. *Mol. Membr. Biol.* 26(8):397-421(2009) Peters, C.J., et al. *Channels (Austin)* 3(5):314-322(2009) Martos, V., et al. *Proc. Natl. Acad. Sci. U.S.A.* 106(26):10482-10486(2009) Stirling, L., et al. *Mol. Biol. Cell* 20(12):2991-3002(2009) Zhu, J., et al. *Biochem. J.* 375 (PT 3), 769-775 (2003) :