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phospho-Kv4.2 (Thr602) Rabbit pAb

Catalog # AP96195

Product Information

Application	WB, E
Primary Accession	Q9NZV8
Other Accession	Q9NZV8
Predicted	Rat, Human, Mouse
Host	Rabbit
Clonality	Polyclonal
Calculated MW	70537
Physical State	Liquid
Immunogen	KLH conjugated synthesised phosphopeptide derived from human KCND2 around the phosphorylation site of Thr602
Epitope Specificity	IP(p-T)PP
Isotype	IgG
Purity	affinity purified by Protein A
Buffer	0.01M TBS (pH7.4) with 1% BSA, 0.02% Proclin300 and 50% Glycerol.
SUBCELLULAR LOCATION	Cell membrane; Multi-pass membrane protein. Cell projection, dendrite. Note=Detected in dendrites in cultured hippocampal neurons. Association with KCNIP2 probably enhances cell surface expression.
SIMILARITY	Belongs to the potassium channel family. D (Shal) (TC 1.A.1.2) subfamily. Kv4.2/KCND2 sub-subfamily.
SUBUNIT	Homotetramer or heterotetramer with KCND1 and/or KCND3. Interacts with DPP6, DLG4 and NCS1/FREQ (By similarity). Interacts with DLG1. Associates with the regulatory subunits KCNIP1, KCNIP2, KCNIP3 and KCNIP4. Probably part of a complex consisting of KCNIP1, KCNIP2 isoform 3 and KCND2. The KCND2-KCNIP2 channel complex contains four KCND2 and four KCNIP2 subunits. Interacts with FLNA, FLNC and DPP10.
Post-translational modifications	Phosphorylated on serine and threonine residues.
Important Note	This product as supplied is intended for research use only, not for use in human, therapeutic or diagnostic applications.
Background Descriptions	Voltage-gated K+ channels in the plasma membrane control the repolarization and the frequency of action potentials in neurons, muscles, and other excitable cells. Pore-forming (alpha) subunit of voltage-gated rapidly inactivating A-type potassium channels. May contribute to I(To) current in heart and I(Sa) current in neurons. Channel properties are modulated by interactions with other alpha subunits and with regulatory subunits.

Additional Information

Gene ID	3751
Other Names	KV4.2; RK5; KCND2_HUMAN; KCND2; Potassium voltage-gated channel subfamily D member 2; Voltage-gated potassium channel subunit Kv4.2; KIAA1044; potassium voltage-gated channel, Shal-related subfamily, member

	2; KCND2 | Kv4.2 (phospho-T602); p-Kv4.2; phospho-Kv4.2; p-KCND2; KCND2 | Kv4.2 (phospho-Thr602)
Target/Specificity	Highly expressed throughout the brain. Expression is very low or absent in other tissues.
Dilution	WB=1:500-2000,ELISA=1:5000-10000
Storage	Store at -20 °C for one year. Avoid repeated freeze/thaw cycles. When reconstituted in sterile pH 7.4 0.01M PBS or diluent of antibody the antibody is stable for at least two weeks at 2-4 °C.

Protein Information

Name	KCND2 (HGNC:6238)
Synonyms	KIAA1044
Function	Voltage-gated potassium channel that mediates transmembrane potassium transport in excitable membranes, primarily in the brain. Mediates the major part of the dendritic A-type current I(SA) in brain neurons (By similarity). This current is activated at membrane potentials that are below the threshold for action potentials. It regulates neuronal excitability, prolongs the latency before the first spike in a series of action potentials, regulates the frequency of repetitive action potential firing, shortens the duration of action potentials and regulates the back-propagation of action potentials from the neuronal cell body to the dendrites. Contributes to the regulation of the circadian rhythm of action potential firing in suprachiasmatic nucleus neurons, which regulates the circadian rhythm of locomotor activity (By similarity). Functions downstream of the metabotropic glutamate receptor GRM5 and plays a role in neuronal excitability and in nociception mediated by activation of GRM5 (By similarity). Mediates the transient outward current I(to) in rodent heart left ventricle apex cells, but not in human heart, where this current is mediated by another family member. Forms tetrameric potassium-selective channels through which potassium ions pass in accordance with their electrochemical gradient (PubMed:10551270, PubMed:11507158, PubMed:14623880, PubMed:14695263, PubMed:14980201, PubMed:15454437, PubMed:16934482, PubMed:19171772, PubMed:24501278, PubMed:24811166, PubMed:34552243, PubMed:35597238). The channel alternates between opened and closed conformations in response to the voltage difference across the membrane (PubMed:11507158). Can form functional homotetrameric channels and heterotetrameric channels that contain variable proportions of KCND2 and KCND3; channel properties depend on the type of pore-forming alpha subunits that are part of the channel. In vivo, membranes probably contain a mixture of heteromeric potassium channel complexes. Interaction with specific isoforms of the regulatory subunits KCNIP1, KCNIP2, KCNIP3 or KCNIP4 strongly increases expression at the cell surface and thereby increases channel activity; it modulates the kinetics of channel activation and inactivation, shifts the threshold for channel activation to more negative voltage values, shifts the threshold for inactivation to less negative voltages and accelerates recovery after inactivation (PubMed:14623880, PubMed:14980201, PubMed:15454437, PubMed:19171772, PubMed:24501278, PubMed:24811166). Likewise, interaction with DPP6 or DPP10 promotes expression at the cell membrane and regulates both channel characteristics and activity (By similarity). Upon depolarization, the channel goes from a resting closed state (C state) to an activated but non-conducting state (C* state), from there, the channel may either inactivate (I state) or open (O state) (PubMed:35597238).

Cellular Location	Cell membrane; Multi-pass membrane protein {ECO:0000269|PubMed:11102480, ECO:0000269|PubMed:14980201, ECO:0000305}. Cell projection, dendrite Synapse {ECO:0000250|UniProtKB:Q63881}. Perikaryon {ECO:0000250|UniProtKB:Q63881}. Postsynaptic cell membrane {ECO:0000250|UniProtKB:Q63881}. Cell projection, dendritic spine {ECO:0000250|UniProtKB:Q63881}. Cell junction {ECO:0000250|UniProtKB:Q63881}. Note=In neurons, primarily detected on dendrites, dendritic spines and on the neuron cell body, but not on axons. Localized preferentially at the dendrites of pyramidal cells in the hippocampus CA1 layer. Detected at GABAergic synapses. Detected at cell junctions that are distinct from synaptic cell contacts. Detected in lipid rafts. Detected primarily at the endoplasmic reticulum or Golgi when expressed by itself (PubMed:15454437). Interaction with KCNIP1, KCNIP2, KCNIP3 or KCNIP4 promotes expression at the cell membrane (PubMed:15454437, PubMed:24811166). Interaction with DPP6 or DPP10 promotes expression at the cell membrane (By similarity) Internalized from the cell membrane by clathrin-dependent endocytosis in response to activation of AMPA-selective glutamate receptors and PKA-mediated phosphorylation at Ser-552. Redistributed from dendritic spines to the main dendritic shaft in response to activation of AMPA- selective glutamate receptors and activation of PKA (By similarity) {ECO:0000250|UniProtKB:Q63881, ECO:0000250|UniProtKB:Q9Z0V2, ECO:0000269|PubMed:15454437, ECO:0000269|PubMed:24811166}
Tissue Location	Detected in ovary, in corpus luteum and in granulosa and theca cells in the follicle (at protein level) (PubMed:15991246). Highly expressed throughout the brain (PubMed:10551270, PubMed:10729221). Detected in amygdala, caudate nucleus, cerebellum, hippocampus, substantia nigra and thalamus (PubMed:10551270, PubMed:10729221). Expression is not detectable or very low in heart, kidney, liver, lung, pancreas and skeletal muscle (PubMed:10551270, PubMed:10729221). Not detectable in human heart atrium (PubMed:12395204).

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