

Rabbit Kv4.2/KCND2 Polyclonal Antibody | anti-Kv4.2/KCND2 antibody

Phospho-Kv4.2/KCND2 (Ser616) Antibody

CATALOG #	HOST	REACTIVITY	APPLICATIONS
AAA329666	Rabbit	Human, Mouse, Rat Predicted Reactivity: Bovine (100%), Rabbit (100%), Dog (100%), Chicken (100%)	ELISA, Immunohistochemistry, Western Blot

PRODUCT SYNONYMS

Kv4.2/KCND2; Polyclonal Antibody; Phospho-Kv4.2/KCND2 (Ser616) Antibody; KCD2; KCND 2; KCND2; KCND2_HUMAN; KIAA1044; MGC119702; MGC119703; Potassium voltage gated channel Shal related subfamily member 2; Potassium voltage-gated channel subfamily D member 2; RK 5; RK5; Voltage gated potassium channel Kv4.2; Voltage gated potassium channel subunit Kv4.2; Voltage sensitive potassium channel; Voltage-gated potassium channel subunit Kv4.2; anti-Kv4.2/KCND2 antibody

PRODUCT SPECIFICATIONS

Host	Rabbit
Reactivity	Human, Mouse, Rat Predicted Reactivity: Bovine (100%), Rabbit (100%), Dog (100%), Chicken (100%)
Clonality	Polyclonal
Isotype	Rabbit IgG
Specificity	Phospho-Kv4.2/KCND2 (Ser616) Antibody detects endogenous levels of Kv4.2/KCND2 only when phosphorylated at Ser616. Tissue Specificity: Detected in ovary, in corpus luteum and in granulosa and theca cells in the follicle (at protein level). Highly expressed throughout the brain. Detected in amygdala, caudate nucleus, cerebellum, hippocampus, substantia nigra and thalamus. Expression is not detectable or very low in heart, kidney, liver, lung, pancreas and skeletal muscle. Not detectable in human heart atrium.
Purity/Purification	The antibody is from purified rabbit serum by affinity purification via sequential chromatography on phospho-peptide and non-phospho-peptide affinity columns.
Form/Format	Liquid. Rabbit IgG in phosphate buffered saline, pH7.4, 150mM NaCl, 0.02% sodium azide and 50% glycerol.
Concentration	1mg/ml (varies by lot)
Applicable Applications for anti-Kv4.2/KCND2 antibody	ELISA (Peptide ELISA), IHC (Immunohistochemistry), WB (Western Blot)
Immunogen	A synthesized peptide derived from human Kv4.2/KCND2 around the phosphorylation site of Ser616.
Conjugation	Unconjugated
Fragment	Fab fragment
Post Translational Modifications	Phosphorylation at Ser-438 in response to MAPK activation is increased in stimulated dendrites. Interaction with KCNIP2 and DPP6 promotes phosphorylation by PKA at Ser-552. Phosphorylation at Ser-552 has no effect on interaction with KCNIP3, but is required for the regulation of channel activity by KCNIP3. Phosphorylation at Ser-552 leads to KCND2 internalization (By similarity). Phosphorylated by MAPK in response to signaling via the metabotropic glutamate receptor GRM5 (By similarity). Phosphorylation at Ser-616 is required for the down-regulation of neuronal A-type currents in response to signaling via GRM5 (By similarity).

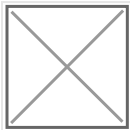
Subunit Structure	Homotetramer or heterotetramer with KCND1 or KCND3. Associates with the regulatory subunits KCNIP1, KCNIP2, KCNIP3 and KCNIP4. In vivo, probably exists as heteromeric complex containing variable proportions of KCND1, KCND2, KCND3, KCNIP1, KCNIP2, KCNIP3, KCNIP4, DPP6 and DPP10. The tetrameric channel can associate with up to four regulatory subunits, such as KCNIP2 or KCNIP4. Interaction with four KCNIP4 chains does not reduce interaction with DPP10. Interacts with DLG4 and NCS1/FREQ (By similarity). Interacts with DLG1. Probably part of a complex consisting of KCNIP1, KCNIP2 isoform 3 and KCND2. Interacts with FLNA, FLNC, DPP6 and DPP10.
Similarity	The transmembrane segment S4 functions as voltage-sensor and is characterized by a series of positively charged amino acids at every third position. Channel opening and closing is effected by a conformation change that affects the position and orientation of the voltage-sensor paddle formed by S3 and S4 within the membrane. A transmembrane electric field that is positive inside would push the positively charged S4 segment outwards, thereby opening the pore, while a field that is negative inside would pull the S4 segment inwards and close the pore. Changes in the position and orientation of S4 are then transmitted to the activation gate formed by the inner helix bundle via the S4-S5 linker region. The N-terminal cytoplasmic region can mediate N-type inactivation by physically blocking the channel (PubMed:14695263). This probably does not happen in vivo, where the N-terminal region mediates interaction with regulatory subunits, such as KCNIP1 and KCNIP2 (PubMed:15358149). The zinc binding sites in the N-terminal domain are important for tetramerization and assembly of a functional channel complex (By similarity). Most likely, the channel undergoes closed-state inactivation, where a subtle conformation change would render the protein less sensitive to activation. The C-terminal cytoplasmic region is important for normal expression at the cell membrane and modulates the voltage-dependence of channel activation and inactivation (PubMed:16934482). It is required for interaction with KCNIP2, and probably other family members as well (By similarity). Belongs to the potassium channel family. D (Shal) (TC 1.A.1.2) subfamily. Kv4.2/KCND2 sub-subfamily.
Subcellular Location	Cell membrane>Multi-pass membrane protein. Cell projection>Dendrite. Cell junction>Synapse. Perikaryon. Cell junction>Synapse>Postsynaptic cell membrane. Cell projection>Dendritic spine. Cell junction. 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).
Preparation and Storage	Store at -20 degree C. Stable for 12 months from date of receipt.

IMAGES



IHC (Immunohistochemisry)

At 1/100 staining Mouse brain tissue by IHC-P. The sample was formaldehyde fixed and a heat mediated antigen retrieval step in citrate buffer was performed. The sample was then blocked and incubated with the primary antibody at 4 degree C overnight. An HRP conjugated anti-Rabbit antibody was used as the secondary antibody.



WB (Western Blot)

Western blot analysis of Kv4.2/KCND2 (Phospho-Ser616) using MDA-MB-435 whole cell lysates. -/+ means absence or presence of N peptide¼non-phospho peptide) and P peptide(phospho peptide).



IHC (Immunohiostchemistry)

Staining Rat brain tissue by IHC-P. The sample was formaldehyde fixed and a heat mediated antigen retrieval step in citrate buffer was performed. The sample was then blocked and incubated with the primary antibody at 4 degree C overnight. An HRP conjugated anti-Rabbit antibody was used as the secondary antibody.

ADDITIONAL INFORMATION

Related Product Information for anti-Kv4.2/KCND2 antibody	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. The channel alternates between opened and closed conformations in response to the voltage difference across the membrane. 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. Likewise, interaction with DPP6 or DPP10 promotes expression at the cell membrane and regulates both channel characteristics and activity (By similarity).
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NCBI AND UNIPROT INFORMATION

NCBI GI #	38258257
NCBI GeneID	3751
UniProt Accession #	Q9NZV8; O95012; O95021; Q2TBD3; Q9UBY7; Q9UN98; Q9UNH9
Molecular Weight	630
NCBI Official Full Name	Potassium voltage-gated channel subfamily D member 2
NCBI Official Synonym Full Names	potassium voltage-gated channel, Shal-related subfamily, member 2
NCBI Official Symbol	KCND2
NCBI Official Synonym Symbols	RK5; KV4.2
NCBI Protein Information	potassium voltage-gated channel subfamily D member 2; voltage-sensitive potassium channel; voltage-gated potassium channel subunit Kv4.2
UniProt Protein Name	Potassium voltage-gated channel subfamily D member 2
UniProt Gene Name	KCND2
UniProt Synonym Gene Names	KIAA1044
UniProt Entry Name	KCND2_HUMAN

For Research Use Only. Not for use in diagnostic or therapeutic procedures. Small volumes of product may become entrapped in the seal of the vial during shipment and storage; if necessary, briefly centrifuge the vial on a tabletop centrifuge to dislodge any liquid in the cap.

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Online datasheet: <https://stage.aaabiotech.com/polyclonal/kv42-kcnd2-antibody-peptide-elisa-immunohistochemistry-western-blot-elisa/329666>