abcam

ab204942

Anti-Kv4.2/KCND2 antibody [5B11B9]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.05% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Recombinant Fragment Protein within Human KCND2 aa 1-200. The exact immunogen used to generate this antibody is proprietary information. Database link Q9NZV8
Clone number	5B11B9
Purification technique	Affinity purification Protein G
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purified from tissue culture supernatant.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1/200 - 1/400
Notes	-

Predicted

Species	Mouse, Rat, Rabbit
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/500 - 1/2000
Notes	-

Predicted

Species	Mouse, Rat, Rabbit
Dilution info	-
Notes	-

Target data

See full target information KCND2

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).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	Kv4.2 also known as KCND2 is a voltage-gated potassium channel subunit that plays an important role in controlling the electrical activity of neurons. This protein has a molecular mass of approximately 74 kDa. Kv4.2 is expressed mainly in the brain especially in the hippocampus and cortex regions. The channel regulates the flow of potassium ions across the cell membrane which is essential for maintaining the resting membrane potential and modulating action potentials.

Biological function summary	The Kv4.2 protein contributes to the transient outward potassium current known as I_A. It often associates with other accessory proteins like KChIP and DPP10 to form functional Kv4.2 channel complexes. These complexes are critical in shaping the signal transmission in neurons affecting synaptic plasticity and neuronal excitability. Kv4.2's action impacts the duration and frequency of neuronal firing influencing functions such as memory and learning.
Pathways	Kv4.2 is integral to the regulation of neuronal excitability in the context of signal transduction pathways. One well-studied pathway involves its role in the MAPK/ERK signaling cascade where Kv4.2 undergoes phosphorylation events that fine-tune its activity. This pathway includes proteins like ERK which interacts with Kv4.2 to affect how neurons respond to synaptic inputs. Kv4.2 is also interconnected with CaMKII signaling which modulates its trafficking and expression in neurons.
Associated diseases and disorders	Alterations in Kv4.2 expression or function relate to neurological conditions such as epilepsy and spinocerebellar ataxia. In epilepsy abnormal Kv4.2 channel activity can lead to hyperexcitability of neurons contributing to seizure development. Interconnections with proteins like Nav1.1 influence these pathological conditions as they also regulate neuronal excitability. Furthermore mutations in Kv4.2 can disrupt normal neuronal signaling which could be implicated in spinocerebellar ataxia contributing to the range of motor coordination symptoms seen in these patients.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

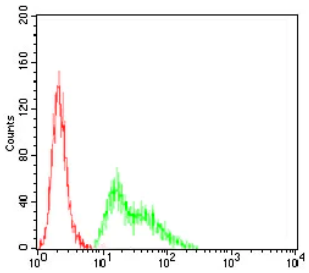
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

Full details and terms and conditions can be found here:
Terms & Conditions.

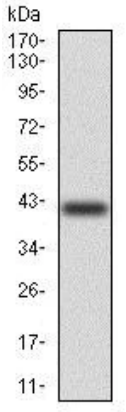
3 product images



Flow Cytometry - Anti-Kv4.2/KCND2 antibody [5B11B9] (ab204942)

Kv4.2/KCND2 Flow Cytometry staining using mouse Anti-Kv4.2/KCND2 antibody

Flow cytometric analysis of HeLa cells labeling Kv4.2/KCND2 with ab204942 at 1/200 dilution (green), compared to a negative control (red).

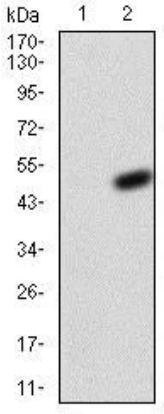


Western blot - Anti-Kv4.2/KCND2 antibody [5B11B9] (ab204942)

Expected MWt is 42.3 kDa.
All lanes:
Western blot - Anti-Kv4.2/KCND2 antibody [5B11B9] (ab204942) at 1/500 dilution

All lanes:
Recombinant Human Kv4.2/KCND2 (aa27-184) protein

Predicted band size: 71 kDa



Western blot - Anti-Kv4.2/KCND2 antibody [5B11B9] (ab204942)

All lanes:
Western blot - Anti-Kv4.2/KCND2 antibody [5B11B9] (ab204942) at 1/500 dilution

Lane 1:
HEK293 cell lysate

Lane 2:
Kv4.2/KCND2 (aa27-184)-hIgGFc transfected HEK293 cell lysate

Predicted band size: 71 kDa

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.