

Product datasheet

Anti-KCNQ1 antibody [N37A/10] ab84819

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Overview

Product name	Anti-KCNQ1 antibody [N37A/10]
Description	Mouse monoclonal [N37A/10] to KCNQ1
Host species	Mouse
Tested applications	Suitable for: IHC-Fr, ICC/IF, IP, Flow Cyt, IHC-P, WB
Species reactivity	Reacts with: Mouse, Rat, Human, Chinese hamster
Immunogen	Fusion protein corresponding to Human KCNQ1 aa 1-150. Database link: P51787 Run BLAST with Run BLAST with
Positive control	Lysate from transfected COS-1 cells transiently expressing KCNQ1.
General notes	<p>The clone number has been updated from S37A-10 to N37A/10, both clone numbers name the same antibody clone.</p> <p>The Life Science industry has been in the grips of a reproducibility crisis for a number of years. Abcam is leading the way in addressing this with our range of recombinant monoclonal antibodies and knockout edited cell lines for gold-standard validation. Please check that this product meets your needs before purchasing.</p> <p>If you have any questions, special requirements or concerns, please send us an inquiry and/or contact our Support team ahead of purchase. Recommended alternatives for this product can be found below, along with publications, customer reviews and Q&As</p>

Properties

Form	Liquid
Storage instructions	Shipped at 4°C. Upon delivery aliquot and store at -20°C. Avoid repeated freeze / thaw cycles.
Storage buffer	Preservative: 0.09% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine)
Purity	Protein G purified
Clonality	Monoclonal
Clone number	N37A/10
Isotype	IgG1

Applications

The Abpromise guarantee

Our **Abpromise guarantee** covers the use of ab84819 in the following tested applications.

The application notes include recommended starting dilutions; optimal dilutions/concentrations should be determined by the end user.

Application	Abreviews	Notes
IHC-Fr		Use at an assay dependent concentration.
ICC/IF		Use at an assay dependent concentration.
IP		Use at an assay dependent concentration.
Flow Cyt		Use 1 µg for 10 ⁶ cells. ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.
IHC-P		Use a concentration of 0.1 - 1 µg/ml.
WB		Use a concentration of 1 - 10 µg/ml. Predicted molecular weight: 75 kDa.

Target

Function

Potassium channel that plays an important role in a number of tissues, including heart, inner ear, stomach and colon (By similarity) (PubMed:10646604). Associates with KCNE beta subunits that modulates current kinetics (By similarity) (PubMed:9312006, PubMed:9108097, PubMed:8900283, PubMed:10646604, PubMed:11101505, PubMed:19687231). Induces a voltage-dependent by rapidly activating and slowly deactivating potassium-selective outward current (By similarity) (PubMed:9312006, PubMed:9108097, PubMed:8900283, PubMed:10646604, PubMed:11101505). Promotes also a delayed voltage activated potassium current showing outward rectification characteristic (By similarity). During beta-adrenergic receptor stimulation participates in cardiac repolarization by associating with KCNE1 to form the I(Ks) cardiac potassium current that increases the amplitude and slows down the activation kinetics of outward potassium current I(Ks) (By similarity) (PubMed:9312006, PubMed:9108097, PubMed:8900283, PubMed:10646604, PubMed:11101505). Muscarinic agonist oxotremorine-M strongly suppresses KCNQ1/KCNE1 current (PubMed:10713961). When associated with KCNE3, forms the potassium channel that is important for cyclic AMP-stimulated intestinal secretion of chloride ions (PubMed:10646604). This interaction with KCNE3 is reduced by 17beta-estradiol, resulting in the reduction of currents (By similarity). During conditions of increased substrate load, maintains the driving force for proximal tubular and intestinal sodium ions absorption, gastric acid secretion, and cAMP-induced jejunal chloride ions secretion (By similarity). Allows the provision of potassium ions to the luminal membrane of the secretory canaliculus in the resting state as well as during stimulated acid secretion (By similarity). When associated with KCNE2, forms a heterooligomer complex leading to currents with an apparently instantaneous activation, a rapid deactivation process and a linear current-voltage relationship and decreases the amplitude of the outward current (PubMed:11101505). When associated with KCNE4, inhibits voltage-gated potassium channel activity (PubMed:19687231). When associated with KCNE5, this complex only conducts current upon strong and continued depolarization (PubMed:12324418). Also forms a heterotetramer with KCNQ5; has a voltage-gated potassium channel activity (PubMed:24855057). Binds with phosphatidylinositol 4,5-

bisphosphate (PubMed:25037568).

Isoform 2: Non-functional alone but modulatory when coexpressed with the full-length isoform 1.

Tissue specificity

Abundantly expressed in heart, pancreas, prostate, kidney, small intestine and peripheral blood leukocytes. Less abundant in placenta, lung, spleen, colon, thymus, testis and ovaries.

Involvement in disease

Long QT syndrome 1
Jervell and Lange-Nielsen syndrome 1
Atrial fibrillation, familial, 3
Short QT syndrome 2
Diabetes mellitus, non-insulin-dependent

Sequence similarities

Belongs to the potassium channel family. KQT (TC 1.A.1.15) subfamily. Kv7.1/KCNQ1 subfamily.

Domain

The segment S4 is probably the voltage-sensor and is characterized by a series of positively charged amino acids at every third position.

The coiled-coil domain mediates tetramerization.

The segment S6 is involved in the inhibition of voltage-gated potassium channel activity by KCNE4.

The C-terminal assembly domain promotes self-interaction; allows functional channel.

Post-translational modifications

Phosphorylation at Ser-27 by PKA; increases delayed rectifier potassium channel activity of the KCNQ1-KCNE1 complex through a macromolecular complex that includes PKA, PP1, and the targeting protein AKAP9.

Ubiquitinated by NEDD4L; promotes internalization (PubMed:22024150). The ubiquitinated form is internalized through a clathrin-mediated endocytosis by interacting with AP2M1 and is recycled back to the cell membrane via RAB4A and RAB11A (PubMed:23529131).

Deubiquitinated by USP2; counteracts the NEDD4L-specific down-regulation of I(Ks) and restores the membrane localization.

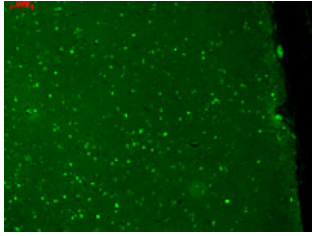
Cellular localization

Cell membrane. Cytoplasmic vesicle membrane. Early endosome. Membrane raft. Endoplasmic reticulum. Basolateral cell membrane. Colocalized with KCNE3 at the plasma membrane (PubMed:10646604). Upon 17beta-oestradiol treatment, colocalizes with RAB5A at early endosome (PubMed:23529131). Heterotetramer with KCNQ5 is highly retained at the endoplasmic reticulum and is localized outside of lipid raft microdomains (PubMed:24855057). During the early stages of epithelial cell polarization induced by the calcium switch it removed from plasma membrane to the endoplasmic reticulum where it retained and it is redistributed to the basolateral cell surface in a PI3K-dependent manner at a later stage (PubMed:21228319).

Form

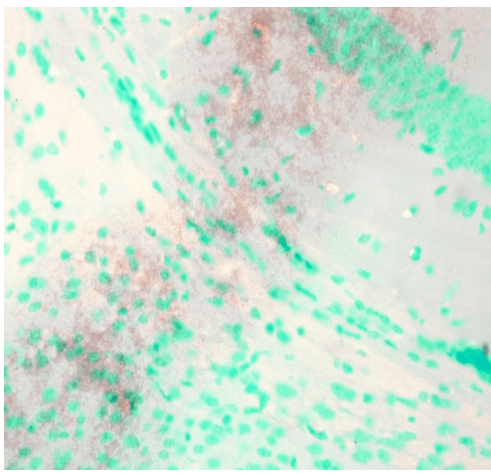
There are 2 isoforms produced by alternative splicing. Isoform 2 also known as: TKvLQT1.

Images



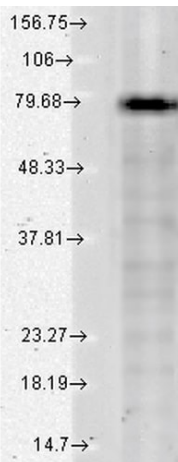
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-KCNQ1 antibody [N37A/10] (ab84819)

ab84819 staining KCNQ1 in human hippocampal tissue by IHC-P (Bouin's fixative fixed paraffin embedded). The sample was incubated with primary antibody at 100 and with a fluorophore conjugated anti mouse secondary at 1/50 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-KCNQ1 antibody [N37A/10] (ab84819)

Immunohistochemical analysis of Mouse Brain labelled for KCNQ1 using ab84819. Fixation: 10% Formalin Solution for 12-24 hours at RT. Primary Antibody: Mouse Anti-KCNQ1 Monoclonal Antibody (ab84819) at 1:1000 for 1 hour at RT. Secondary Antibody: HRP/DAB Detection System: Biotinylated Goat Anti-Mouse, Streptavidin Peroxidase, DAB Chromogen (brown) for 30 minutes at RT. Counterstain: Mayer Hematoxylin (purple/blue) nuclear stain at 250-500 μ l for 5 minutes at RT.



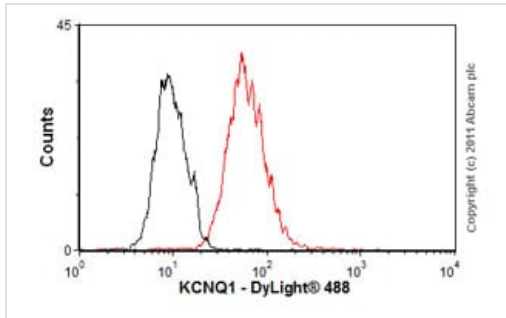
Western blot - Anti-KCNQ1 antibody [N37A/10] (ab84819)

Anti-KCNQ1 antibody [N37A/10] (ab84819) at 1/1000 dilution + Human Cell lysates at 15 μ g

Secondary

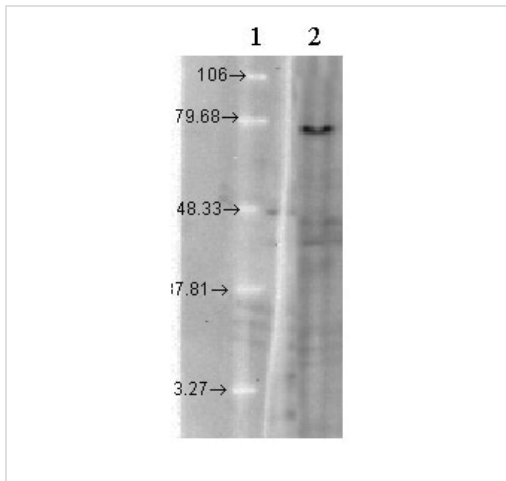
Sheep Anti-Mouse IgG: HRP for 1 hour at RT

Predicted band size: 75 kDa



Flow Cytometry - Anti-KCNQ1 antibody [N37A/10] (ab84819)

Overlay histogram showing HEK293 cells stained with ab84819 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab84819, 1µg/1x10⁶ cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) ([ab96879](#)) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] ([ab91353](#), 2µg/1x10⁶ cells) used under the same conditions. Acquisition of >5,000 events was performed.



Western blot - Anti-KCNQ1 antibody [N37A/10] (ab84819)

All lanes : Anti-KCNQ1 antibody [N37A/10] (ab84819) at 1 µg/ml

Lane 1 : Molecular weight marker

Lane 2 : Cell lysates prepared from CHO -T cells transfected with mink-KvLQT1

Predicted band size: 75 kDa

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