PRODUCT INFORMATION

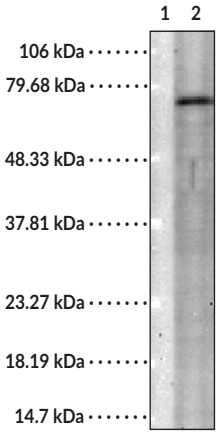
KCNQ4 Potassium Channel Monoclonal Antibody (Clone N43-6)

Item No. 13713

Overview and Properties

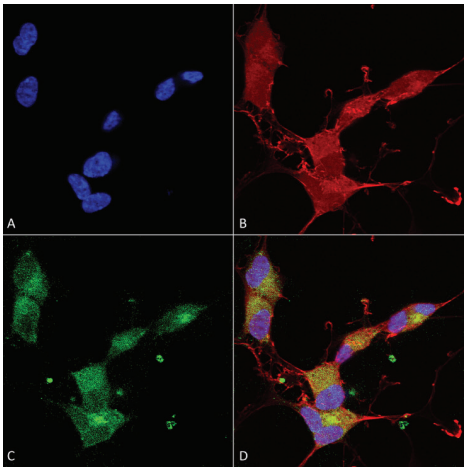
Contents:	This vial contains 100 µg of protein G-purified monoclonal antibody.
Immunogen:	Fusion protein amino acids 2-77 of human KCNQ
Species Reactivity:	(+) Human, mouse, rat; other species not tested
Uniprot No.:	P56696
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥1 year
Storage Buffer:	PBS, pH 7.4, with 50% glycerol and 0.09% sodium azide
Concentration:	1 mg/ml
Clone:	N43-6
Host:	Mouse
Isotype:	IgG1
Applications:	Immunocytochemistry/Immunofluorescence (ICC/IF), Immunohystochemistry (IHC), and Western blot (WB); the recommended starting dilution is 1:100 for ICC/IF and 1:1,000 for IHC and WB. Other applications were not tested, therefore optimal working concentration/dilution should be determined empirically.

Images



Lane 1: MW Markers
Lane 2: Rat cell lysates (15 µg)

WB of KCNQ4 Potassium Channel Monoclonal Antibody (Clone N43-6) at a 1:1,000 dilution.



Immunocytochemical/Immunofluorescent labeling of human neuroblastoma cells (SH-SY5Y). Cells were fixed with 4% PFA for 15 minutes and incubated with KCNQ4 Potassium Channel Monoclonal Antibody (Clone N43-6) (Item No. 13713) at a 1:100 dilution overnight at 4°C with slow rocking. Then cells were incubated with Alexa Fluor® 488 at a 1:1,000 dilution for 1 hour at room temperature and counterstained with Phalloidin-iFluor 647 (red) F-Actin stain and Hoechst (blue) nuclear stain at a 1:800 dilution, 1.6 mM, for 20 minutes at room temperature. *Panel A:* Hoechst (blue) nuclear stain. *Panel B:* Phalloidin-iFluor 647 (red) F-Actin stain. *Panel C:* KCNQ4 Potassium Channel Monoclonal Antibody (Clone N43-6). *Panel D:* Composite.

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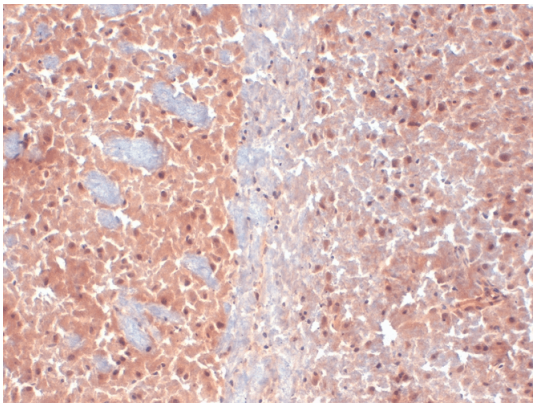
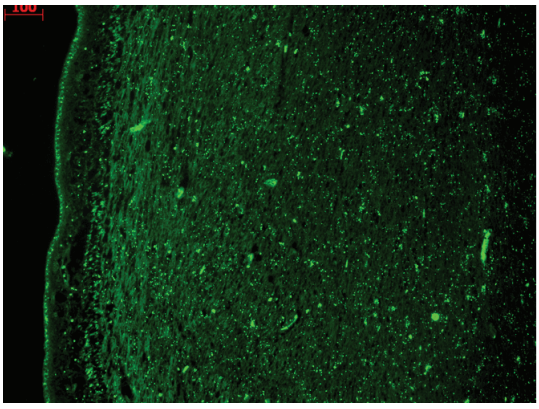
Images continued



Immunohistochemistry (IHC) analysis of formalin-fixed, paraffin-embedded (FFPE) mouse brain tissue. After incubation with KCNQ4 Potassium Channel Monoclonal Antibody (Clone N43-6) (Item No. 13713), at a 1:1,000 dilution slides were incubated with biotinylated secondary antibody, followed by alkaline phosphatase-streptavidin and chromogen (DAB).



Immunohistochemistry (IHC) analysis of formalin-fixed, paraffin-embedded (FFPE) human hippocampus tissue. After incubation with KCNQ4 Potassium Channel Monoclonal Antibody (Clone N43-6) (Item No. 13713), at a 1:1,000 dilution, slides were incubated with secondary antibody.

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Description

Ion channels are integral membrane proteins that help establish and control the small voltage gradient across the plasma membrane of living cells by allowing the flow of ions down their electrochemical gradient.[1] They are present in the membranes that surround all biological cells and their main function is to regulate the flow of ions across this membrane. Whereas some ion channels permit the passage of ions based on charge, others conduct based on an ionic species, such as sodium or potassium. Furthermore, in some ion channels, the passage is governed by a gate which is controlled by chemical or electrical signals, temperature, or mechanical forces. There are a few main classifications of gated ion channels. There are voltage-gated ion channels, ligand-gated, other gating systems, and finally those that are classified differently, having more exotic characteristics. The first are voltage-gated ion channels which open and close in response to membrane potential. These are then separated into sodium, calcium, potassium, proton, transient receptor, and cyclic nucleotide-gated channels, each of which is responsible for a unique role. Ligand-gated ion channels are also known as ionotropic receptors, and they open in response to specific ligand molecules binding to the extracellular domain of the receptor protein. The other gated classifications include activation and inactivation by second messengers, inward-rectifier potassium channels, calcium-activated potassium channels, two-pore-domain potassium channels, light-gated channels, mechano-sensitive ion channels, and cyclic nucleotide-gated channels. Finally, the other classifications are based on less normal characteristics such as two-pore channels and transient receptor potential channels.[2] The protein encoded by this gene forms a potassium channel that is thought to play a critical role in the regulation of neuronal excitability, particularly in sensory cells of the cochlea.[3,4] The current generated by this channel is inhibited by M_1 muscarinic acetylcholine receptors and is activated by retigabine, a novel anti-convulsant drug.[5]

References

1. Hille, B. Ion Channels of Excitable Membranes. 3rd ed., *Sinauer Associates Inc.*, Sunderland, MA (2001).
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3. Hernandez, C.C., Zaika, O., Tolstykh, G.P., *et al.* Regulation of neural KCNQ channels: Signalling pathways structural motifs and functional implications. *J. Physiol.* **586(7)**, 1811-1821 (2008).
4. Erber, R., Eichelsbacher, U., Powajbo, V., *et al.* EphB4 controls blood vascular morphogenesis during postnatal angiogenesis. *EMBO J.* **25(3)**, 628-641 (2006).
5. Tatulian, L., Delmas, P., Abogadie, F.C., *et al.* Activation of expressed KCNQ potassium currents and native neuronal M-type potasium currents by the anti-convulsant drug retigabine. *J. Neurosci.* **21(15)**, 5535-5545 (2001).

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