

PRODUCT INFORMATION

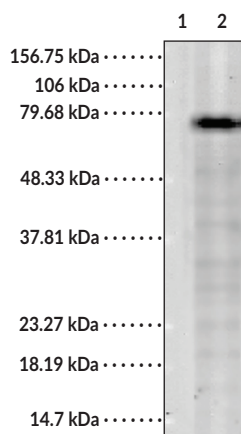
KCNQ1 Potassium Channel Monoclonal Antibody (Clone N37A-10)

Item No. 13711

Overview and Properties

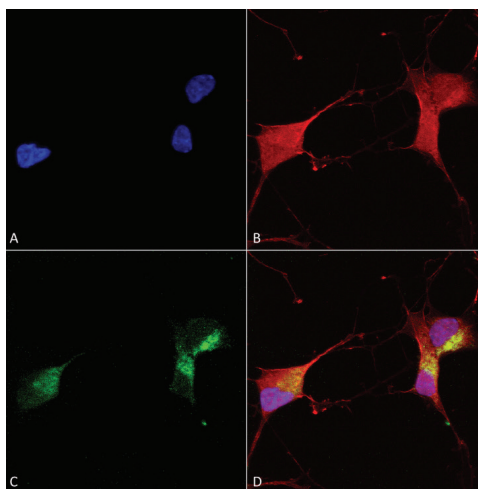
Contents:	This vial contains 100 µg of protein G-purified monoclonal antibody.
Immunogen:	Fusion protein amino acids 2-101 of human KCNQ1
Species Reactivity:	(+) Hamster, human, mouse, rat; other species not tested
Uniprot No.:	P51787
Form:	Liquid
Storage:	-20°C (as supplied)
Stability:	≥1 year
Storage Buffer:	PBS, pH 7.4, with 50% glycerol and 0.09% sodium azide
Concentration:	1 mg/ml
Clone:	N37A-10
Host:	Mouse
Isotype:	IgG1
Applications:	Immunocytochemistry/Immunofluorescence (ICC/IF), Immunohistochemistry (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: Human cell lysates (15 µg)

WB of KCNQ1 Potassium Channel Monoclonal Antibody (Clone N37A-10) 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 KCNQ1 Potassium Channel Monoclonal Antibody (Clone N37A-10) (Item No. 13711) 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:* KCNQ1 Potassium Channel Monoclonal Antibody (Clone N37A-10). *Panel D:* Composite.

WARNING
THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA
This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

WARRANTY AND LIMITATION OF REMEDY
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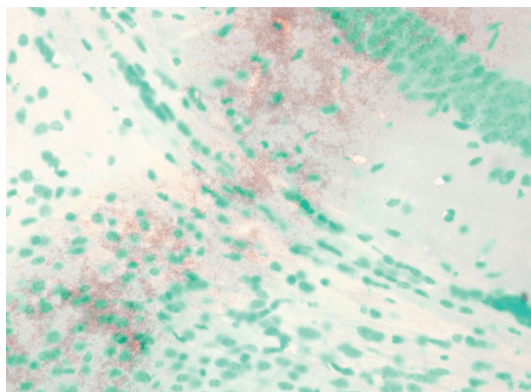
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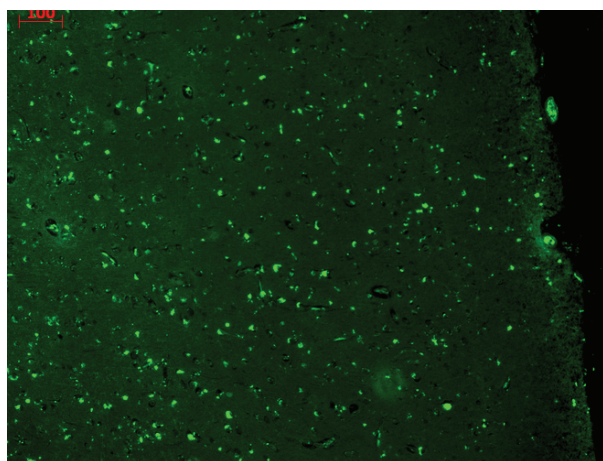
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Images continued



Immunohistochemistry (IHC) analysis of formalin-fixed, paraffin-embedded (FFPE) mouse brain tissue. After incubation with KCNQ1 Potassium Channel Monoclonal Antibody (Clone N37A-10) (Item No. 13711), 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 KCNQ1 Potassium Channel Monoclonal Antibody (Clone N37A-10) (Item No. 13711), 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 a 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 K_v7.1 (KvLQT1) is a potassium channel protein coded by the gene KCNQ1. K_v7.1 is present in the cell membranes of cardiac muscle tissue and in inner ear neurons among other tissues.³ In the cardiac cells, K_v7.1 mediates the IKs (or slow delayed rectifying potassium) current that contributes to the repolarization of the cell, terminating the cardiac action potential and thereby the heart's contraction.^{4,5}

References

1. Hille, B. Ion Channels of Excitable Membranes. 3rd ed., Sinauer Associates Inc., Sunderland, MA (2001).
2. What are ion channels? Retrieved October 22, 2009, from <http://www.ionchannels.org/>.
3. Lang, F., Vallon, V., Knipper, M., *et al.* Functional significance of channels and transporters expressed in the inner ear and kidney. *Am. J. Physiol. Cell Physiol.* **293**(4), C1187-C1208 (2007).
4. Hoellenriegel, J., Coffey, G.P., Sinha, U., *et al.* Selective, novel spleen tyrosine kinase (Syk) inhibitors suppress chronic lymphocytic leukemia B-cell activation and migration. *Leukemia* **26**(7), 1576-1583 (2012).
5. Silva, J. and Rudy, Y. Subunit interaction determines IKs participation in cardiac repolarization and repolarization reserve. *Circulation* **112**(10), 1384-1391 (2005).

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