SANTA CRUZ BIOTECHNOLOGY, INC.

KCNQ1 (K-17): sc-10645

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The Power to Question

BACKGROUND

Voltage-gated K^+ channels in the plasma membrane control the repolarization and the frequency of action potentials in neurons, muscles, and other excitable cells. A specific K^+ channel, comprised of a α-subunit KCNQ1 and a β-subunit KCNE1, a small protein which spans the membrane only once, is predominantly expressed in the heart and in the cochlea, and it is responsible for regulating the slow, depolarization-activated potassium current. Mutations in the genes encoding for KCNQ1 and KCNE1 lead to cardiac disease because they directly impair electrical signaling, and mutations in KCNQ4 are implicated in the onset of deafness. KCNQ proteins, including KCNQ1 and KCNQ4, characteristically contain six transmembrane domains and function as tetramers. KCNQ4 forms heteromeric channels with KCNQ3 and is expressed in several tissues, including the cochlea, where it is present in outer hair cells.

REFERENCES

1. Takumi, T., et al. 1988. Cloning of a membrane protein that induces a slow voltage-gated potassium current. Science 242: 1042-1045.
2. Wang, Q., et al. 1996. Positional cloning of a novel potassium channel gene: KVLQT1 mutations cause cardiac arrhythmias. Nature Genet. 12: 17-23.
3. Chouabe, C., et al. 1997. Properties of KvLQT1 K^+ channel mutations in Romano-Ward and Jervell and Lange-Nielsen inherited cardiac arrhythmias. EMBO J. 16: 5472-5479.
4. Kubisch, C., et al. 1999. KCNQ4, a novel potassium channel expressed in sensory outer hair cells, is mutated in dominant deafness. Cell 5: 437-446.

CHROMOSOMAL LOCATION

Genetic locus: KCNQ1 (human) mapping to 11p15.5; Kcnq1 (mouse) mapping to 7 F5.

SOURCE

KCNQ1 (K-17) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the C-terminus of KCNQ1 of human origin.

PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

Blocking peptide available for competition studies, sc-10645 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

Store at 4° C, **DO NOT FREEZE**. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.

APPLICATIONS

KCNQ1 (K-17) is recommended for detection of KCNQ1 isoforms 1 and 2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

KCNQ1 (K-17) is also recommended for detection of KCNQ1 isoforms 1 and 2 in additional species, including canine, bovine and avian.

Suitable for use as control antibody for KCNQ1 siRNA (h): sc-35745, KCNQ1 siRNA (m): sc-35746, KCNQ1 shRNA Plasmid (h): sc-35745-SH, KCNQ1 shRNA Plasmid (m): sc-35746-SH, KCNQ1 shRNA (h) Lentiviral Particles: sc-35745-V and KCNQ1 shRNA (m) Lentiviral Particles: sc-35746-V.

Molecular Weight of KCNQ1 isoform 1/2: 75/61 kDa.

Positive Controls: Sol8 cell lysate: SC-2249, mouse heart extract: sc-2254 or mouse kidney extract: sc-2255.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Szabó, G., et al. 2005. Asymmetrical distribution of ion channels in canine and human left-ventricular wall: epicardium versus midmyocardium. Pflugers Arch. 450: 307-316.
2. Leroy, C., et al. 2006. Regulation of ENaC and CFTR expression with K^+ channel modulators and effect on fluid absorption across alveolar epithelial cells. Am. J. Physiol. Lung Cell Mol. Physiol. 291: L1207-L1219.
3. de Castro, M.P., et al. 2006. Protein distribution of KCNQ1, $KCNH_2$, and KCNE3 potassium channel subunits during mouse embryonic development. Anat. Rec. A Discov., Mol. Cell. Evol. Biol. 288: 304-315.

RESEARCH USE

For research use only, not for use in diagnostic procedures.