SANTA CRUZ BIOTECHNOLOGY, INC.

KCNQ1 (E-7): sc-365764

SANTA CRUZ BIOTECHNOLOGY

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 an 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 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. Nat. 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 96: 437-446.
5. Schroeder, B.C., et al. 2000. A constitutively open potassium channel formed by KCNQ1 and KCNE3. Nature 403: 196-199.

CHROMOSOMAL LOCATION

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

SOURCE

KCNQ1 (E-7) is a mouse monoclonal antibody raised against amino acids 547-676 mapping at the C-terminus of KCNQ1 of human origin.

PRODUCT

Each vial contains 200 µg IgG_1 kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

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 for detailed protocols and support products.

APPLICATIONS

KCNQ1 (E-7) is recommended for detection of KCNQ1 isoforms 1 and 2 of mouse, rat and human origin by Western Blotting (starting dilution 1:100, 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).

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.

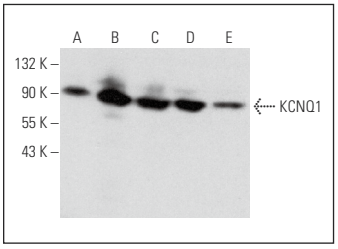
Molecular Weight of KCNQ1 isoforms 1/2: 75/61 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, human heart extract: sc-363763 or human skeletal muscle extract: sc-363776.

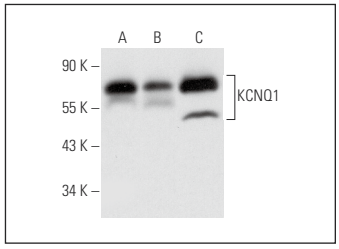
RECOMMENDED SUPPORT REAGENTS

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgGκ BP-HRP: sc-516102 or m-IgGκ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker™ Molecular Weight Standards: sc-2035, UltraCruz® Blocking Reagent: sc-516214 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 m-IgGκ BP-FITC: sc-516140 or m-IgGκ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz® Mounting Medium: sc-24941 or UltraCruz® Hard-set Mounting Medium: sc-359850.

DATA



KCNQ1 (E-7): sc-365764. Western blot analysis of KCNQ1 expression in A-431 (**A**), RAW 264.7 (**B**), C2C12 (**C**), KNRK (**D**) and L8 (**E**) whole cell lysates.



KCNQ1 (E-7): sc-365764. Western blot analysis of KCNQ1 expression in human heart (**A**) and human skeletal muscle (**B**) tissue extracts and SJRH30 whole cell lysate (**C**).

SELECT PRODUCT CITATIONS

1. Gao, T., et al. 2021. KCNQ1 potassium channel expressed in human sperm is involved in sperm motility, acrosome reaction, protein tyrosine phosphorylation, and ion homeostasis during capacitation. Front. Physiol. 12: 761910.

RESEARCH USE

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