SANTA CRUZ BIOTECHNOLOGY, INC.

KCNQ5 (2E2): sc-293305

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The Power to Question

BACKGROUND

Voltage-gated K^+ channels in the plasma membrane control the repolarization and frequency of action potentials in neurons, muscles and other excitable cells. KCNQ proteins 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. KCNQ5 expression is highest in the brain and muscle. Out of the three splice variants of KCNQ5, the longest variant, KCNQ5 type III, is the predominant form expressed in skeletal muscle. The gene encoding human KCNQ5 maps to chromosome 6q13. Mutations in the gene encoding KCNQ2, but not in the gene encoding KCNQ5, lead to benign familial neonatal convulsions, while mutations in the genes encoding for KCNQ1 and KCNE1 lead to cardiac disease because they directly impair electrical signaling. Mutations in KCNQ4 are implicated in the onset of deafness.

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 5: 437-446.
5. Schroeder, B.C., et al. 2000. A constitutively open potassium channel formed by KCNQ1 and KCNE3. Nature 13: 196-199.
6. Lerche, C., et al. 2000. Molecular cloning and functional expression of KCNQ5, a potassium channel subunit that may contribute to neuronal M-current diversity. J. Biol. Chem. 275: 22395-22400.
7. Schroeder, B.C., et al. 2000. KCNQ5, a novel potassium channel broadly expressed in brain, mediates M-type currents. J. Biol. Chem. 275: 24089-24095.
8. Kananura, C., et al. 2000. The new voltage gated potassium channel KCNQ5 and neonatal convulsions. Neuroreport 11: 2063-2067.

CHROMOSOMAL LOCATION

Genetic locus: KCNQ5 (human) mapping to 6q13.

SOURCE

KCNQ5 (2E2) is a mouse monoclonal antibody raised against amino acids 833-932 of KCNQ5 of human origin.

PRODUCT

Each vial contains 100 µg IgG_{2a} kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

KCNQ5 (2E2) is recommended for detection of KCNQ5 of 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)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for KCNQ5 siRNA (h): sc-42505, KCNQ5 shRNA Plasmid (h): sc-42505-SH and KCNQ5 shRNA (h) Lentiviral Particles: sc-42505-V.

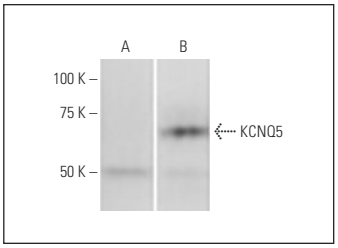
Molecular Weight of KCNQ5: 99 kDa.

Positive Controls: KCNQ5 transfected 293T whole cell lysate.

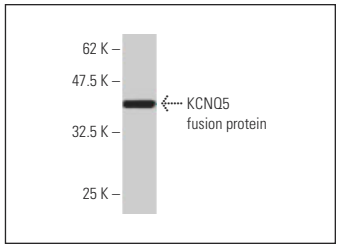
RECOMMENDED SUPPORT REAGENTS

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).

DATA



KCNQ5 (2E2): sc-293305. Western blot analysis of KCNQ5 expression in non-transfected (**A**) and KCNQ5 transfected (**B**) 293T whole cell lysates.



KCNQ5 (2E2): sc-293305. Western blot analysis of human recombinant KCNQ5 fusion protein.

SELECT PRODUCT CITATIONS

1. Sevilla-Montero, J., et al. 2021. Cigarette smoke directly promotes pulmonary arterial remodeling and Kv7.4 channel dysfunction. Am. J. Respir. Crit. Care Med. 203: 1290-1305.

STORAGE

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

RESEARCH USE

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

PROTOCOLS

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