SANTA CRUZ BIOTECHNOLOGY, INC.

KCNQ4 (F-10): sc-271320

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Epilepsy affects about 0.5% of the world's population and has a large genetic component. Epilepsy results from an electrical hyperexcitability in the central nervous system. Potassium channels are important regulators of electrical signaling, determining the firing properties and responsiveness of a variety of neurons. Benign familial neonatal convulsions (BFNC), an autosomal dominant epilepsy of infancy, has been shown to be caused by mutations in the KCNQ2 or the KCNQ3 potassium channel genes. KCNQ2 and KCNQ3 are voltage-gated potassium channel proteins with six putative transmembrane domains. Both proteins display a broad distribution within the brain, with expression patterns that largely overlap. Mutations of KCNQ4 affect the functions of sensory outer hair cells and lead to deafness.

REFERENCES

1. Singh, N.A., et al. 1998. A novel potassium channel gene, KCNQ2, is mutated in an inherited epilepsy of newborns. Nat. Genet. 18: 25-29.
2. Charlier, C., et al. 1998. A pore mutation in a novel KQT-like potassium channel gene in an idiopathic epilepsy family. Nat. Genet. 18: 53-55.
3. Schroeder, B.C., et al. 1998. Moderate loss of function of cyclic-AMP-modulated KCNQ2/KCNQ3 K^+ channels causes epilepsy. Nature 396: 687-690.
4. Biervert, C., et al. 1998. A potassium channel mutation in neonatal human epilepsy. Science 279: 403-406.
5. Yang, W.P., et al. 1998. Functional expression of two KvLQT1-related potassium channels responsible for an inherited idiopathic epilepsy. J. Biol. Chem. 273: 19419-19423.

CHROMOSOMAL LOCATION

Genetic locus: KCNQ4 (human) mapping to 1p34.2; Kcnq4 (mouse) mapping to 4 D2.2.

SOURCE

KCNQ4 (F-10) is a mouse monoclonal antibody raised against amino acids 349-478 mapping within an internal region of KCNQ4 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.

KCNQ4 (F-10) is available conjugated to agarose (sc-271320 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-271320 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271320 PE), fluorescein (sc-271320 FITC), Alexa Fluor® 488 (sc-271320 AF488), Alexa Fluor® 546 (sc-271320 AF546), Alexa Fluor® 594 (sc-271320 AF594) or Alexa Fluor® 647 (sc-271320 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271320 AF680) or Alexa Fluor® 790 (sc-271320 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

RESEARCH USE

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

APPLICATIONS

KCNQ4 (F-10) is recommended for detection of KCNQ4 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 KCNQ4 siRNA (h): sc-42503, KCNQ4 siRNA (m): sc-42504, KCNQ4 shRNA Plasmid (h): sc-42503-SH, KCNQ4 shRNA Plasmid (m): sc-42504-SH, KCNQ4 shRNA (h) Lentiviral Particles: sc-42503-V and KCNQ4 shRNA (m) Lentiviral Particles: sc-42504-V.

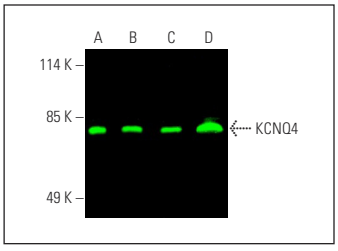
Molecular Weight of KCNQ4: 77 kDa.

Positive Controls: IMR-32 cell lysate: sc-2409, SH-SY5Y cell lysate: sc-3812 or CCRF-CEM cell lysate: sc-2225.

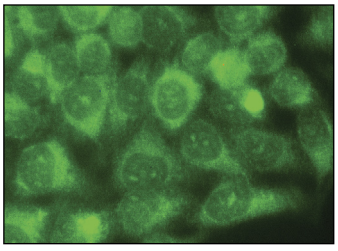
RECOMMENDED SUPPORT REAGENTS

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



KCNQ4 (F-10): sc-271320. Near-Infrared western blot analysis of KCNQ4 expression in SH-SY5Y (**A**), CCRF-CEM (**B**), IMR-32 (**C**) and HeLa (**D**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 680: sc-516180.



KCNQ4 (F-10): sc-271320. Immunofluorescence staining of methanol-fixed HeLa cells showing cytoplasmic localization.

SELECT PRODUCT CITATIONS

1. Affortit, C., et al. 2022. A disease-associated mutation in thyroid hormone receptor α1 causes hearing loss and sensory hair cell patterning defects in mice. Sci. Signal. 15: eabj4583.

STORAGE

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