SANTA CRUZ BIOTECHNOLOGY, INC.

KCNQ1 (G-8): sc-365186

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.

CHROMOSOMAL LOCATION

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

SOURCE

KCNQ1 (G-8) is a mouse monoclonal antibody specific for an epitope mapping between amino acids 649-676 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.

KCNQ1 (G-8) is available conjugated to agarose (sc-365186 AC), 500 µg/ 0.25 ml agarose in 1 ml, for IP; to HRP (sc-365186 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-365186 PE), fluorescein (sc-365186 FITC), Alexa Fluor® 488 (sc-365186 AF488), Alexa Fluor® 546 (sc-365186 AF546), Alexa Fluor® 594 (sc-365186 AF594) or Alexa Fluor® 647 (sc-365186 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-365186 AF680) or Alexa Fluor® 790 (sc-365186 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

Blocking peptide available for competition studies, sc-365186 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% stabilizer protein).

APPLICATIONS

KCNQ1 (G-8) 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.

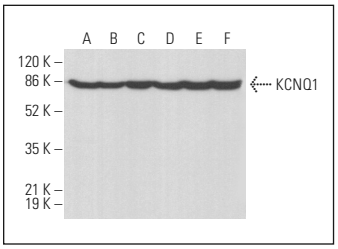
Molecular Weight of KCNQ1 isoforms 1/2: 75/61 kDa.

Positive Controls: A-431 whole cell lysate: sc-2201, MCF7 whole cell lysate: sc-2206 or RAW 264.7 whole cell lysate: sc-2211.

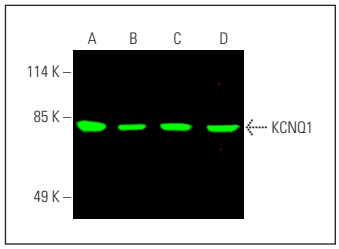
STORAGE

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

DATA



KCNQ1 (G-8): sc-365186. Western blot analysis of KCNQ1 expression in MCF7 (**A**), A-431 (**B**), RAW 264.7 (**C**), KNRK (**D**), SJRH30 (**E**) and Jurkat (**F**) whole cell lysates. Detection reagent used: m-IgGκ BP-HRP: sc-516102.



KCNQ1 (G-8): sc-365186. Near-infrared western blot analysis of KCNQ1 expression in Sol8 (**A**), SJRH30 (**B**), MCF7 (**C**) and A-431 (**D**) whole cell lysates. Blocked with UltraCruz® Blocking Reagent: sc-516214. Detection reagent used: m-IgGκ BP-CFL 680: sc-516180.

SELECT PRODUCT CITATIONS

1. Gao, M., et al. 2013. An altered expression of genes involved in the regulation of ion channels in atrial myocytes is correlated with the risk of atrial fibrillation in patients with heart failure. Exp. Ther. Med. 5: 1239-1243.
2. Tommiska, J., et al. 2017. Two missense mutations in KCNQ1 cause pituitary hormone deficiency and maternally inherited gingival fibromatosis. Nat. Commun. 8: 1289.
3. Hou, P., et al. 2020. Two-stage electro-mechanical coupling of a K_V channel in voltage-dependent activation. Nat. Commun. 11: 676.
4. Wang, X. and Fitts, R.H. 2020. Cardiomyocyte slowly activating delayed rectifier potassium channel: regulation by exercise and β-adrenergic signaling. J. Appl. Physiol. 128: 1177-1185.
5. Olgar, Y., et al. 2022. Insulin acts as an atypical KCNQ1/KCNE1-current activator and reverses long QT in Insulin-resistant aged rats by accelerating the ventricular action potential repolarization through affecting the β_3-adrenergic receptor signaling pathway. J. Cell. Physiol. 237: 1353-1371.
6. Schreiber, J.A., et al. 2022. A benzodiazepine activator locks K_V7.1 channels open by electro-mechanical uncoupling. Commun. Biol. 5: 301.

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.