SANTA CRUZ BIOTECHNOLOGY, INC.

# KCNQ1 (H-130): sc-20816

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 $\alpha$-subunit KCNQ1 and a $\beta$-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. 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.


## CHROMOSOMAL LOCATION

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

## SOURCE

KCNQ1 (H-130) is a rabbit polyclonal antibody raised against amino acids 547-676 mapping at 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.

## APPLICATIONS

KCNQ1 (H-130) 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), immunohistochemistry (including paraffin-embedded sections) (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 isoform 1: 75 kDa.

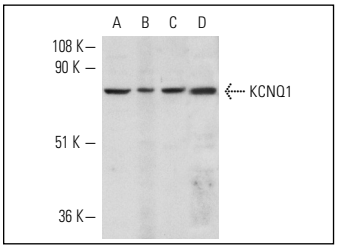
Molecular Weight of KCNQ1 isoform 2: 61 kDa.

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

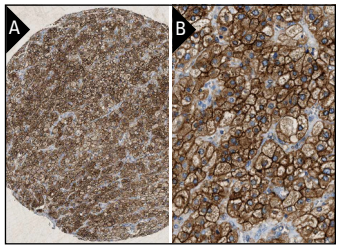
## STORAGE

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

## DATA




KCNQ1 (H-130): sc-20816. Western blot analysis of KCNQ1 expression in Sol8 whole cell lysate (**A**) and mouse heart (**B**), mouse kidney (**C**) and rat heart (**D**) tissue extracts.




KCNQ1 (H-130): sc-20816. Immunoperoxidase staining of formalin fixed, paraffin-embedded human adrenal gland tissue showing membrane staining of cortical cells at low (**A**) and high (**B**) magnification. Kindly provided by The Swedish Human Protein Atlas (HPA) program.

## SELECT PRODUCT CITATIONS


1. Wu, D.M., et al. 2006. Characterization of an LQT5-related mutation in KCNE1, Y81C: implications for a role of KCNE1 cytoplasmic domain in IKs channel function. Heart Rhythm 3: 1031-1040.
2. Lubka-Pathak, M., et al. 2010. Altered expression of securin (Pttg1) and serpina3n in the auditory system of hearing-impaired Tff3-deficient mice. Cell. Mol. Life Sci. 68: 2739-2749.
3. Dong, M.Q., et al. 2010. Regulation of human cardiac KCNQ1/KCNE1 channel by epidermal growth factor receptor kinase. Biochim. Biophys. Acta 1798: 995-1001.
4. Lubka-Pathak, M., et al. 2010. Altered expression of securin (Pttg1) and serpina3n in the auditory system of hearing-impaired Tff3-deficient mice. Cell. Mol. Life Sci. 68: 2739-2749.
5. Hu, C., et al. 2011. Down-regulation of the human ether-a-go-go-related gene in rat cardiac hypertrophy. Am. J. Med. Sci. 341: 119-125.
6. Xiong, H., et al. 2011. Simultaneously reduced NKCC1 and Na,K-ATPase expression in murine cochlear lateral wall contribute to conservation of endocochlear potential following a sensorineural hearing loss. Neurosci. Lett. 488: 204-209.


## RESEARCH USE

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