SANTA CRUZ BIOTECHNOLOGY, INC.

KIR3.4 (A-14): sc-23635

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

G protein-coupled inwardly rectifying potassium channels (KIR3.1 through KIR3.4) are coupled to numerous neurotransmitter receptors in the brain and are abundantly expressed in the olfactory bulb, hippocampus, neocortex, dentate gyrus, cerebellar cortex and thalamus regions of the brain. Also known as GIRK, KIR3 potassium channels localize to the soma and dendrites as well as axons of neurons. Liberated $G_{\beta\gamma}$ subunits from G protein heterotrimers bind to and regulate KIR3 channel activity. $G_{\beta3}$- and $G_{\beta4}$-containing $G_{\beta\gamma}$ dimers bind directly to cytoplasmic domains of KIR3 proteins and increase the K^+ current while $G_{\beta5}$-containing $G_{\beta\gamma}$ dimers inhibit KIR3 K^+ current. KIR3 activity is also inhibited by tyrosine phosphorylation. Brain-derived neurotrophic factor activates receptor tyrosine kinase-B, which then phosphorylates KIR3 tyrosine residues, effectively inactivating the KIR3 channels.

REFERENCES

1. Braun, A.P., et al. 1992. Activation of α 1-adrenoceptors modulates the inwardly rectifying potassium currents of mammalian atrial myocytes. Pflugers Arch. 421: 431-439.
2. Ponce, A., et al. 1996. G protein-gated inward rectifier K^+ channel proteins (GIRK1) are present in the soma and dendrites as well as in nerve terminals of specific neurons in the brain. J. Neurosci. 16: 1990-2001.
3. Farkas, R.H., et al. 1997. Neurotensin and dopamine D2 activation oppositely regulate the same K^+ conductance in rat midbrain dopaminergic neurons. Neurosci. Lett. 231: 21-24.
4. Lei, Q., et al. 2000. Activation and inhibition of G protein-coupled inwardly rectifying potassium (KIR3) channels by G protein by subunits. Proc. Natl. Acad. Sci. 97: 9771-9776.
5. Rogalski, S.L., et al. 2000. TrkB activation by brain-derived neurotrophic factor inhibits the G protein-gated inward rectifier KIR3 by tyrosine phosphorylation of the channel. J. Biol. Chem. 275: 25082-25088.

CHROMOSOMAL LOCATION

Genetic locus: KCNJ5 (human) mapping to 11q24.3; Kcnj5 (mouse) mapping to 9 A4.

SOURCE

KIR3.4 (A-14) is an affinity purified goat polyclonal antibody raised against a peptide mapping near the N-terminus of KIR3.4 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.

Blocking peptide available for competition studies, sc-23635 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

STORAGE

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

APPLICATIONS

KIR3.4 (A-14) is recommended for detection of KIR3.4 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), 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).

KIR3.4 (A-14) is also recommended for detection of KIR3.4 in additional species, including equine, canine, bovine, porcine and avian.

Suitable for use as control antibody for KIR3.4 siRNA (h): sc-42622, KIR3.4 siRNA (m): sc-42623, KIR3.4 shRNA Plasmid (h): sc-42622-SH, KIR3.4 shRNA Plasmid (m): sc-42623-SH, KIR3.4 shRNA (h) Lentiviral Particles: sc-42622-V and KIR3.4 shRNA (m) Lentiviral Particles: sc-42623-V.

Molecular Weight of KIR3.4: 48 kDa.

Postive Controls: mouse heart extract: sc-2254.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use donkey anti-goat IgG-HRP: sc-2020 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible donkey anti-goat IgG-HRP: sc-2033 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use donkey anti-goat IgG-FITC: sc-2024 (dilution range: 1:100-1:400) or donkey anti-goat IgG-TR: sc-2783 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Yang, D., et al. 2008. Expression of inwardly rectifying potassium channel subunits in native human retinal pigment epithelium. Exp. Eye Res. 87: 176-183.
2. Wagner, V., et al. 2010. Cloning and characterisation of GIRK1 variants resulting from alternative RNA editing of the KCNJ3 gene transcript in a human breast cancer cell line. J. Cell. Biochem. 110: 598-608.

RESEARCH USE

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

PROTOCOLS

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