SANTA CRUZ BIOTECHNOLOGY, INC.

KIR2.1 (H-40): sc-28633

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

The KIR (for inwardly rectifying potassium channel) family of potassium channels possesses a greater tendency to allow potassium to flow into the cell rather than out of it. The KIR2 subunit family includes 2.1, 2.2, 2.3 and 2.4. Unlike G protein-coupled KIR3 subunits, KIR2.1 requires both phosphorylation by PKA and ATP hydrolysis for functional activity. KIR2.1 is expressed in the superior and inferior collicula and the pontine region of the brain, where it moderates synaptic transmission, like many other potassium channels. In the placenta, KIR2.1 is expressed throughout gestation in cytotrophoblast cells. In the kidney, KIR2.1 colocalizes with KIR5.1 in the proximal tubule. KIR2.1, 2.2 and 2.3 associate with the membrane-associated guanylate kinase synapse-associated protein 97 in the cerebellum and heart. Phosphorylation of KIR2.2 by protein kinase A inhibits the associates with SAP97. Arachidonic acid increases current amplitude in KIR2.3 activity but does not affect the activity of KIR2.1, 2.2 or 2.4. KIR2.4 is abundantly expressed in the neuronal retina and is sensitive to changes in extracellular pH.

REFERENCES

1. Fakler, B., et al. 1994. KIR2.1 inward rectifier K^+ channels are regulated independently by protein kinases and ATP hydrolysis. Neuron 13: 1413-1420.
2. Isomoto, S., et al. 1997. Inwardly rectifying potassium channels: their molecular heterogeneity and function. Jpn. J. Physiol. 47: 11-39.
3. Mylona, P., et al. 1998. Expression of the KIR2.1 (inwardly rectifying potassium channel) gene in the human placenta and in cultured cytotrophoblast cells at different stages of differentiation. Mol. Hum. Reprod. 4: 195-200.
4. Hughes, B.A., et al. 2000. Cloning and functional expression of human retinal KIR2.4, a pH-sensitive inwardly rectifying K^+ channel. Am. J. Physiol., Cell Physiol. 279: C771-C784.
5. Derst, C., et al. 2001. Genetic and functional linkage of KIR5.1 and KIR2.1 channel subunits. FEBS Lett. 491: 305-311.
6. Leonoudakis, D., et al. 2001. Inward rectifier potassium channel KIR2.2 is associated with synapse-associated protein SAP97. J. Cell Sci. 114: 987-998.
7. Liu, Y., et al. 2001. Direct activation of an inwardly rectifying potassium channel by arachidonic acid. Mol. Pharmacol. 59: 1061-1068.

CHROMOSOMAL LOCATION

Genetic locus: KCNJ2 (human) mapping to 17q24.3; Kcnj2 (mouse) mapping to 11 E2.

SOURCE

KIR2.1 (H-40) is a rabbit polyclonal antibody raised against amino acids 378-417 mapping within a C-terminal cytoplasmic domain of KIR2.1 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

KIR2.1 (H-40) is recommended for detection of KIR2.1 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

KIR2.1 (H-40) is also recommended for detection of KIR2.1 in additional species, including equine, canine, bovine and porcine.

Suitable for use as control antibody for KIR2.1 siRNA (h): sc-42612, KIR2.1 siRNA (m): sc-42613, KIR2.1 shRNA Plasmid (h): sc-42612-SH, KIR2.1 shRNA Plasmid (m): sc-42613-SH, KIR2.1 shRNA (h) Lentiviral Particles: sc-42612-V and KIR2.1 shRNA (m) Lentiviral Particles: sc-42613-V.

RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (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) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml). 3) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

SELECT PRODUCT CITATIONS

1. Sekar, R.B., et al. 2007. Lentiviral vector-mediated expression of GFP or KIR2.1 alters the electrophysiology of neonatal rat ventricular myocytes without inducing cytotoxicity. Am. J. Physiol. Heart Circ. Physiol. 293: H2757-H2770.
2. Sekar, R.B., et al. 2009. IK1 heterogeneity affects genesis and stability of spiral waves in cardiac myocyte monolayers. Circ. Res. 104: 355-364.
3. de Boer, T.P., et al. 2010. The anti-protozoal drug pentamidine blocks KIR2.x-mediated inward rectifier current by entering the cytoplasmic pore region of the channel. Br. J. Pharmacol. 159: 1532-1541.
4. Liu, A., et al. 2010. Functional characterization of inward rectifier potassium ion channel in murine fetal ventricular cardiomyocytes. Cell. Physiol. Biochem. 26: 413-420.
5. Varkevisser, R., et al. 2013. Inhibiting the clathrin-mediated endocytosis pathway rescues K(IR)2.1 downregulation by pentamidine. Pflugers Arch. 465: 247-259.

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.