

# KIR2.1 (N-18): sc-18708

## 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<sup>+</sup> 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<sup>+</sup> channel. *Am. J. Physiol. Cell Physiol.* 279: 771-784.
5. Liu, Y., et al. 2001. Direct activation of an inwardly rectifying potassium channel by arachidonic acid. *Mol. Pharmacol.* 59: 1061-1068.
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.

## CHROMOSOMAL LOCATION

Genetic locus: KCNJ2 (human) mapping to 17q24.3, KCNJ12 (human) mapping to 17p11.2; Kcnj2 (mouse) mapping to 11 E2, Kcnj12 (mouse) mapping to 11 B2.

## SOURCE

KIR2.1 (N-18) is an affinity purified goat polyclonal antibody raised against a peptide mapping at the N-terminus 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.

Blocking peptide available for competition studies, sc-18708 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

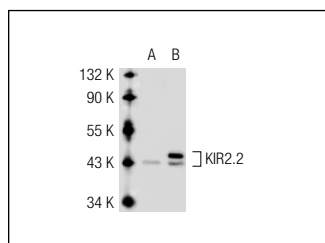
## APPLICATIONS

KIR2.1 (N-18) is recommended for detection of KIR2.1 and KIR2.2 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

KIR2.1 (N-18) is also recommended for detection of KIR2.1 and KIR2.2 in additional species, including equine, canine, bovine, porcine and avian.

Positive Controls: KIR2.2 (h): 293T Lysate: sc-115662.

## DATA



KIR2.1 (N-18): sc-18708. Western blot analysis of KIR2.2 expression in non-transfected: sc-117752 (A) and human KIR2.2 transfected: sc-115662 (B) 293T whole cell lysates.

## 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. Jansen, J.A., et al. 2008. Lysosome mediated KIR2.1 breakdown directly influences inward rectifier current density. *Biochem. Biophys. Res. Commun.* 367: 687-692.
3. Houtman, M.J., et al. 2012. Experimental mapping of the canine KCNJ2 and KCNJ12 gene structures and functional analysis of the canine K(IR)2.2 ion Channel. *Front. Physiol.* 3: 9.
4. Vetri, F., et al. 2012. Impairment of neurovascular coupling in type 1 diabetes mellitus in rats is linked to PKC modulation of BK(Ca) and Kir channels. *Am. J. Physiol. Heart Circ. Physiol.* 302: H1274-H1284.
5. Varkevissar, 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.