SANTA CRUZ BIOTECHNOLOGY, INC.

# KCNMB4 siRNA (m): sc-146370

## BACKGROUND

MaxiK channels are large conductance voltage and $Ca^{2+}$-activated potassium channels which are formed by tetramers of MaxiKα subunits, which create pores that are used for smooth muscle tone and neuronal excitability. These MaxiKα subunits have the ability to coassemble with MaxiKβ subunits that are structurally related and are able to regulate the function of MaxiKα subunits. KCNMB4 (potassium large conductance calcium-activated channel, subfamily M, β member 4), also known as Slo-β-4 or Maxi K channel subunit β-4, is a 210 amino acid multi-pass membrane protein belonging to the KCNMB family. Predominantly expressed in brain, KCNMB4 is a regulatory subunit of the calcium activated potassium MaxiKα channel. KCNMB4 contributes to MaxiKα channel diversity by modulating calcium sensitivity and gating kinetics of MaxiKα.

## REFERENCES


1. Berkovic, S.F. 1997. Epilepsy genes and the genetics of epilepsy syndromes: the promise of new therapies based on genetic knowledge. Epilepsia 38: S32-S36.
2. Behrens, R., et al. 2000. hKCNMB3 and hKCNMB4, cloning and characterization of two members of the large-conductance calcium-activated potassium channel β subunit family. FEBS Lett. 474: 99-106.
3. Brenner, R., et al. 2000. Cloning and functional characterization of novel large conductance calcium-activated potassium channel β subunits, hKCNMB3 and hKCNMB4. J. Biol. Chem. 275: 6453-6461.
4. Meera, P., et al. 2000. A neuronal β subunit (KCNMB4) makes the large conductance, voltage- and $Ca^{2+}$-activated $K^+$ channel resistant to charybdotoxin and iberiotoxin. Proc. Natl. Acad. Sci. USA 97: 5562-5567.
5. Jin, P., et al. 2002. Phosphorylation-dependent functional coupling of hSlo calcium-dependent potassium channel and its hβ 4 subunit. J. Biol. Chem. 277: 10014-10020.
6. Jin, P., et al. 2002. Reciprocal modulation between the α and β 4 subunits of hSlo calcium-dependent potassium channels. J. Biol. Chem. 277: 43724-43729.
7. Orio, P., et al. 2002. New disguises for an old channel: MaxiK channel β-subunits. News Physiol. Sci. 17: 156-161.
8. Henney, N.C., et al. 2009. A large-conductance (BK) potassium channel subtype affects both growth and mineralization of human osteoblasts. Am. J. Physiol., Cell Physiol. 297: C1397-C1408.
9. Holtzclaw, J.D., et al. 2010. Intercalated cell BK-α/β4 channels modulate sodium and potassium handling during potassium adaptation. J. Am. Soc. Nephrol. 21: 634-645.


## CHROMOSOMAL LOCATION

Genetic locus: Kcnmb4 (mouse) mapping to 10 D2.

## PROTOCOLS

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

## PRODUCT

KCNMB4 siRNA (m) is a pool of 3 target-specific 19-25 nt siRNAs designed to knock down gene expression. Each vial contains 3.3 nmol of lyophilized siRNA, sufficient for a 10 µM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see KCNMB4 shRNA Plasmid (m): sc-146370-SH and KCNMB4 shRNA (m) Lentiviral Particles: sc-146370-V as alternate gene silencing products.

For independent verification of KCNMB4 (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-146370A, sc-146370B and sc-146370C.

## STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at -20° C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at -20° C, avoid contact with RNAses and repeated freeze thaw cycles.

Resuspend lyophilized siRNA duplex in 330 µl of the RNAse-free water provided. Resuspension of the siRNA duplex in 330 µl of RNAse-free water makes a 10 µM solution in a 10 µM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

KCNMB4 siRNA (m) is recommended for the inhibition of KCNMB4 expression in mouse cells.

## SUPPORT REAGENTS

For optimal siRNA transfection efficiency, Santa Cruz Biotechnology's siRNA Transfection Reagent: sc-29528 (0.3 ml), siRNA Transfection Medium: sc-36868 (20 ml) and siRNA Dilution Buffer: sc-29527 (1.5 ml) are recommended. Control siRNAs or Fluorescein Conjugated Control siRNAs are available as 10 µM in 66 µl. Each contain a scrambled sequence that will not lead to the specific degradation of any known cellular mRNA. Fluorescein Conjugated Control siRNAs include: sc-36869, sc-44239, sc-44240 and sc-44241. Control siRNAs include: sc-37007, sc-44230, sc-44231, sc-44232, sc-44233, sc-44234, sc-44235, sc-44236, sc-44237 and sc-44238.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor KCNMB4 gene expression knockdown using RT-PCR Primer: KCNMB4 (m)-PR: sc-146370-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS


1. Kim, E.Y., et al. 2024. Dysregulation of podocyte BK channels and nephrosis: effects of circulating factors and auxiliary β4 subunits. Cells 14: 22.


## RESEARCH USE

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