SANTA CRUZ BIOTECHNOLOGY, INC.

TRCP4 siRNA (h): sc-42668

BACKGROUND

Transient receptor potential cation (TRPC) channels are a superfamily of six transmembrane segment-spanning, gated cation channels. TRPC subtypes mediate store-operated Ca^{2+} entry, a process involving Ca^{2+} influx and replenishment of Ca^{2+} stores formerly emptied through the action of inositol 1,4,5-trisphosphate production and other Ca^{2+} mobilizing agents. TRPC channels influence calcium-depletion induced calcium influx processes in response to chemo-, mechano- and osmoregulatory events. Human TRPC4 protein, also known as Trp4, functions as a cation channel and is a constituent of native store-operated Ca^{2+}-permeable channels. In the presence of elevated Ca^{2+} concentrations, TRPC4 binds Calmodulin (CaM) at an interface which comprises amino acids 688-759 and 786-848 of TRPC4. The ability of TRPC4 to increase inwardly rectifying K^+ currents suggests that TRPC4 may contribute to the formation of a novel K^+ channel or up-regulate endogenous inwardly rectifying K^+ channel expression or activity.

REFERENCES

1. Philipp, S., et al. 1998. A novel capacitative calcium entry channel expressed in excitable cells. EMBO J. 17: 4274-4282.
2. Harteneck, C., et al. 2000. From worm to man: three subfamilies of TRP channels. Trends Neurosci. 23: 159-166.
3. Hofmann, T., et al. 2000. Transient receptor potential channels as molecular substrates of receptor-mediated cation entry. J. Mol. Med. 78: 14-25.
4. McKay, R.R., et al. 2000. Cloning and expression of the human transient receptor potential 4 (Trp4) gene: localization and functional expression of human Trp4 and Trp3. Biochem. J. 351: 735-746.
5. Zhang, Z., et al. 2001. Increased inwardly rectifying potassium currents in HEK-293 cells expressing murine transient receptor potential 4. Biochem. J. 354: 717-725.
6. Trost, C., et al. 2001. The transient receptor potential, Trp4, cation channel is a novel member of the family of calmodulin binding proteins. Biochem. J. 355: 663-670.

CHROMOSOMAL LOCATION

Genetic locus: TRPC4 (human) mapping to 13q13.3.

PRODUCT

TRPC4 siRNA (h) 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 TRPC4 shRNA Plasmid (h): sc-42668-SH and TRPC4 shRNA (h) Lentiviral Particles: sc-42668-V as alternate gene silencing products.

For independent verification of TRPC4 (h) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-42668A, sc-42668B and sc-42668C.

RESEARCH USE

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

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

TRPC4 siRNA (h) is recommended for the inhibition of TRPC4 expression in human 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 TRPC4 gene expression knockdown using RT-PCR Primer: TRPC4 (h)-PR: sc-42668-PR (20 µl, 486 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wang, Y., et al. 2016. TRPC1/TRPC3 channels mediate lysophosphatidylcholine-induced apoptosis in cultured human coronary artery smooth muscles cells. Oncotarget 7: 50937-50951.
2. Caropreso, V., et al. 2016. Englerin A inhibits EWS-FLI1 DNA binding in ewing sarcoma cells. J. Biol. Chem. 291: 10058-10066.
3. Li, G., et al. 2018. Bradykinin-mediated Ca^{2+} signalling regulates cell growth and mobility in human cardiac c-Kit^+ progenitor cells. J. Cell. Mol. Med. 22: 4688-4699.
4. Hsu, W.L., et al. 2020. Nociceptive transient receptor potential canonical 7 (TRPC7) mediates aging-associated tumorigenesis induced by ultraviolet B. Aging Cell 19: e13075.
5. Yart, L., et al. 2022. Dual effect of nifedipine on pregnant human myometrium contractility: implication of TRPC1. J. Cell. Physiol. 237: 1980-1991.

PROTOCOLS

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