SANTA CRUZ BIOTECHNOLOGY, INC.

TPCN1 siRNA (h): sc-63141

BACKGROUND

TPCN1 (two pore segment channel 1), also known as TPC1, is a widely expressed, 816 amino acid voltage-gated cation channel protein with predominant expression in lung, liver, heart and kidney. In the kidney, TPCN1 localizes to the inner medullary collecting ducts. In contrast with the distantly related four-domain voltage-gated calcium and sodium channels and the more closely related four-domain ion transport protein located on the surface of sperm cells (CatSper), TPCN1 is a two-domain channel. Similar to the four-domain channel structure, each of the two homologous domains that comprise TPCN1 contains six transmembrane segments (S1-S6) with a pore loop between S5 and S6 and a voltage sensor segment that is positively charged. TPCN1 has hydrophilic N- and C-termini that localize to the cytoplasm.

REFERENCES

1. Ishibashi, K., Suzuki, M. and Imai, M. 2000. Molecular cloning of a novel form (two-repeat) protein related to voltage-gated sodium and calcium channels. Biochem. Biophys. Res. Commun. 270: 370-376.
2. Online Mendelian Inheritance in Man, OMIM™. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 609666. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
3. Clapham, D.E. and Garbers, D.L. 2005. International Union of Pharmacology. L. Nomenclature and structure-function relationships of CatSper and two-pore channels. Pharmacol. Rev. 57: 451-454.
4. Peiter, E., Maathuis, F.J., Mills, L.N., Knight, H., Pelloux, J., Hetherington, A.M. and Sanders, D. 2005. The vacuolar Ca^{2+}-activated channel TPC1 regulates germination and stomatal movement. Nature 434: 404-408.
5. Lin, C., Yu, Y., Kadono, T., Iwata, M., Umemura, K., Furuichi, T., Kuse, M., Isobe, M., Yamamoto, Y., Matsumoto, H., Yoshizuka, K. and Kawano, T. 2005. Action of aluminum, novel TPC1-type channel inhibitor, against salicylate-induced and cold-shock-induced calcium influx in tobacco BY-2 cells. Biochem. Biophys. Res. Commun. 332: 823-830.

CHROMOSOMAL LOCATION

Genetic locus: TPCN1 (human) mapping to 12q24.13.

PRODUCT

TPCN1 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 TPCN1 shRNA Plasmid (h): sc-63141-SH and TPCN1 shRNA (h) Lentiviral Particles: sc-63141-V as alternate gene silencing products.

For independent verification of TPCN1 (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-63141A, sc-63141B and sc-63141C.

PROTOCOLS

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

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

TPCN1 siRNA (h) is recommended for the inhibition of TPCN1 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 TPCN1 gene expression knockdown using RT-PCR Primer: TPCN1 (h)-PR: sc-63141-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. Nguyen, O.N., Grimm, C., Schneider, L.S., Chao, Y.K., Atzberger, C., Bartel, K., Watermann, A., Ulrich, M., Mayr, D., Wahl-Schott, C., Biel, M. and Vollmar, A.M. 2017. Two-pore channel function is crucial for the migration of invasive cancer cells. Cancer Res. 77: 1427-1438.

RESEARCH USE

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