SANTA CRUZ BIOTECHNOLOGY, INC.

TPCN2 siRNA (h): sc-96434

BACKGROUND

Voltage-dependent calcium channels are essential for the release of neurotransmitters. TPCN2 (two pore segment channel 2), also known as TPC2 or SHEP10, is a 752 amino acid multi-pass membrane protein that belongs to the calcium channel α-1 subunit family. Existing as a dimer, TPCN2 is thought to function as one of the major voltage-gated Ca^{2+} channel (VDCC) across the plasma membrane, effectively mediating the uptake and release of neurotransmitters. Variations in the TPCN2 gene are associated with variation in skin/hair/eye pigmentation type 10 (SHEP10), a condition that affects hair, eye and skin pigmentation. The gene encoding TPCN2 maps to human chromosome 11, which houses over 1,400 genes and comprises nearly 4% of the human genome. Jervell and Lange-Nielsen syndrome, Jacobsen syndrome, Niemann-Pick disease, hereditary angioedema and Smith-Lemli-Opitz syndrome are associated with defects in genes that maps to chromosome 11.

REFERENCES

1. 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.
2. Sulem, P., Gudbjartsson, D.F., Stacey, S.N., Helgason, A., Rafnar, T., Magnusson, K.P., Manolescu, A., Karason, A., Palsson, A., Thorleifsson, G., Jakobsdottir, M., Steinberg, S., Pálsson, S., Jonasson, F., et al. 2007. Genetic determinants of hair, eye and skin pigmentation in Europeans. Nat. Genet. 39: 1443-1452.
3. Sulem, P., Gudbjartsson, D.F., Stacey, S.N., Helgason, A., Rafnar, T., Jakobsdottir, M., Steinberg, S., Gudjonsson, S.A., Palsson, A., Thorleifsson, G., Pálsson, S., Sigurgeirsson, B., Thorisdottir, K., et al. 2008. Two newly identified genetic determinants of pigmentation in Europeans. Nat. Genet. 40: 835-837.
4. Online Mendelian Inheritance in Man, OMIM™. 2008. Johns Hopkins University, Baltimore, MD. MIM Number: 612163. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
5. Sturm, R.A. 2009. Molecular genetics of human pigmentation diversity. Hum. Mol. Genet. 18: R9-R17.

CHROMOSOMAL LOCATION

Genetic locus: TPCN2 (human) mapping to 11q13.3.

PRODUCT

TPCN2 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 TPCN2 shRNA Plasmid (h): sc-96434-SH and TPCN2 shRNA (h) Lentiviral Particles: sc-96434-V as alternate gene silencing products.

For independent verification of TPCN2 (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-96434A, sc-96434B and sc-96434C.

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

TPCN2 siRNA (h) is recommended for the inhibition of TPCN2 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 TPCN2 gene expression knockdown using RT-PCR Primer: TPCN2 (h)-PR: sc-96434-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.
2. Müller, M., Gerndt, S., Chao, Y.K., Zisis, T., Nguyen, O.N.P., Gerwien, A., Urban, N., Müller, C., Gegenfurtner, F.A., Geisslinger, F., Ortler, C., Chen, C.C., Zahler, S., Biel, M., Schaefer, M., Grimm, C., Bracher, F., et al. 2021. Gene editing and synthetically accessible inhibitors reveal role for TPC2 in HCC cell proliferation and tumor growth. Cell Chem. Biol. E-published.
3. Nabar, N.R., Heijjer, C.N., Shi, C.S., Hwang, I.Y., Ganesan, S., Karlsson, M.C.I. and Kehrl, J.H. 2021. LRRK2 is required for CD38-mediated NAADP-Ca^{2+} signaling and the downstream activation of TFEB (transcription factor EB) in immune cells. Autophagy. E-published.

RESEARCH USE

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