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TRPC3 siRNA (m): sc-42667

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 TRPC3 protein, also known as TRP3, is a 848 amino acid cation channel that is predominantly expressed in brain and, at lower levels, in testis, ovaries, colon, prostate, small intestine, placenta and lung. The activation of store-mediated Ca^{2+} entry in human cells likely occurs through the association between IP3R (inositol 1,4,5-trisphosphate receptors) and TRPC3. TRPC3 activity is also activated by DAG (diacylglycerol) independently of PKC (protein kinase C).

REFERENCES

- Zhu, X., et al. 1995. Molecular cloning of a widely expressed human homologue for the *Drosophila* TRP gene. *FEBS Lett.* 373: 193-218.
- Zitt, C., et al. 1996. Cloning and functional expression of a human Ca^{2+} -permeable cation channel activated by calcium store depletion. *Neuron* 16: 1189-1196.
- Philipp, S., et al. 1998. A novel capacitative calcium entry channel expressed in excitable cells. *EMBO J.* 17: 4274-4282.
- Harteneck, C., et al. 2000. From worm to man: three subfamilies of TRP channels. *Trends Neurosci.* 23: 159-166.

CHROMOSOMAL LOCATION

Genetic locus: *Trpc3* (mouse) mapping to 3 B.

PRODUCT

TRPC3 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see TRPC3 shRNA Plasmid (m): sc-42667-SH and TRPC3 shRNA (m) Lentiviral Particles: sc-42667-V as alternate gene silencing products.

For independent verification of TRPC3 (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-42667A, sc-42667B and sc-42667C.

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 μ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μ l of RNase-free water makes a 10 μ M solution in a 10 μ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

TRPC3 siRNA (m) is recommended for the inhibition of TRPC3 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 μ M in 66 μ l. 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.

GENE EXPRESSION MONITORING

TRPC3 (C-5): sc-514670 is recommended as a control antibody for monitoring of TRPC3 gene expression knockdown by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000) or immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker[™] Molecular Weight Standards: sc-2035, UltraCruz[®] Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor TRPC3 gene expression knockdown using RT-PCR Primer: TRPC3 (m)-PR: sc-42667-PR (20 μ l, 512 bp). Annealing temperature for the primers should be $55-60^{\circ}$ C and the extension temperature should be $68-72^{\circ}$ C.

SELECT PRODUCT CITATIONS

- Mizoguchi, Y., et al. 2014. Brain-derived neurotrophic factor (BDNF) induces sustained intracellular Ca^{2+} elevation through the up-regulation of surface transient receptor potential 3 (TRPC3) channels in rodent microglia. *J. Biol. Chem.* 289: 18549-18555.
- Chen, C., et al. 2017. Critical role of TRPC1 in thyroid hormone-dependent dopaminergic neuron development. *Biochim. Biophys. Acta Mol. Cell Res.* 1864: 1900-1912.
- Deurloo, M.H.S., et al. 2019. Transcription factor 2l regulates neuronal development via TRPC3 in 7q11.23 disorder models. *Mol. Neurobiol.* 56: 3313-3325.

RESEARCH USE

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