

PIEZO1 siRNA (h): sc-93227

BACKGROUND

PIEZO1, also designated membrane protein induced by β -Amyloid treatment (Mib), is a 2,036 amino acid protein that is expressed in brain and may play a role in Alzheimer's disease. The encoding PIEZO1 maps to human chromosome 16, which encodes over 900 genes in approximately 90 million base pairs, makes up nearly 3% of human cellular DNA and is associated with a variety of genetic disorders. The rare disorder Rubinstein-Taybi syndrome is associated with chromosome 16, as is Crohn's disease, a gastrointestinal inflammatory condition that may involve the NOD2 gene. An association with systemic lupus erythematosus and a number of other autoimmune disorders with the pericentromeric region of chromosome 16 has led to the identification of SLC5A11 as a potential autoimmune modifier.

REFERENCES

1. Ben Hamida, C., et al. 1997. Homozygosity mapping of giant axonal neuropathy gene to chromosome 16q24.1. *Neurogenetics* 1: 129-133.
2. Karlsson, J., et al. 2003. Novel quantitative trait loci controlling development of experimental autoimmune encephalomyelitis and proportion of lymphocyte subpopulations. *J. Immunol.* 170: 1019-1026.
3. Martin, J., et al. 2004. The sequence and analysis of duplication-rich human chromosome 16. *Nature* 432: 988-994.
4. Satoh, K., et al. 2006. A novel membrane protein, encoded by the gene covering KIAA0233, is transcriptionally induced in senile plaque-associated astrocytes. *Brain Res.* 1108: 19-27.
5. Carneiro, L.A., et al. 2007. Nod-like receptors in innate immunity and inflammatory diseases. *Ann. Med.* 39: 581-593.
6. Yang, Y., et al. 2007. Giant axonal neuropathy. *Cell. Mol. Life Sci.* 64: 601-609.
7. King, K., et al. 2007. Identification, evolution, and association study of a novel promoter and first exon of the human NOD2 (CARD15) gene. *Genomics* 90: 493-501.
8. Gervasini, C., et al. 2007. High frequency of mosaic CREBBP deletions in Rubinstein-Taybi syndrome patients and mapping of somatic and germline breakpoints. *Genomics* 90: 567-573.

CHROMOSOMAL LOCATION

Genetic locus: PIEZO1 (human) mapping to 16q24.3.

PRODUCT

PIEZO1 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 μ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see PIEZO1 shRNA Plasmid (h): sc-93227-SH and PIEZO1 shRNA (h) Lentiviral Particles: sc-93227-V as alternate gene silencing products.

For independent verification of PIEZO1 (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-93227A, sc-93227B and sc-93227C.

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

PIEZO1 siRNA (h) is recommended for the inhibition of PIEZO1 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 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PIEZO1 gene expression knockdown using RT-PCR Primer: PIEZO1 (h)-PR: sc-93227-PR (20 μ l, 583 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Lhomme, A., et al. 2019. Stretch-activated PIEZO1 channel in endothelial cells relaxes mouse intrapulmonary arteries. *Am. J. Respir. Cell Mol. Biol.* 60: 650-658.
2. Jiang, L., et al. 2021. Mechanosensitive PIEZO1 channel activation promotes ventilator-induced lung injury via disruption of endothelial junctions in ARDS rats. *Biochem. Biophys. Res. Commun.* 556: 79-86.
3. Chen, J., et al. 2022. Mechanosensitive channel PIEZO1 is required for pulmonary artery smooth muscle cell proliferation. *Am. J. Physiol. Lung Cell. Mol. Physiol.* 322: L737-L760.

RESEARCH USE

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

PROTOCOLS

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