SANTA CRUZ BIOTECHNOLOGY, INC.

AQP12A siRNA (h): sc-95002

BACKGROUND

Aquaporins (AQPs) are a large family of integral membrane water transport channel proteins that facilitate the transport of water through the cell membrane. This function is conserved in animals, plants and bacteria. AQP12A (aquaporin 12A), also known as AQPX2, is a 295 amino acid multi-pass membrane protein. AQP12A contains five exons and is solely expressed in pancreas. Similar to other aquaporin family members, AQP12A consists of two tandem repeats, each containing three membrane-spanning domains. However, AQP12A contains one asparagine-proline-alanine (NPA) signature motif that is distinct from other aquaporins, which typically have two, and a variant asparagine-proline-threonine (NPT) motif. AQP12B (aquaporin 12B), also known as INSSA3 (insulin synthesis associated 3), is a 265 amino acid protein that, like AQP12A, belongs to the MIP/aquaporin family and the AQP11/AQP12 subfamily and is encoded by a gene that maps to human chromosome 2q37.3. AQP12A/B may interact with AQP1 in pancreatic acinar cells and may also assist in fusion regulation of secretory granules in a hormone-dependent manner.

REFERENCES

1. Itoh, T., Rai, T., Kuwahara, M., Ko, S.B., Uchida, S., Sasaki, S. and Ishibashi, K. 2005. Identification of a novel aquaporin, AQP12, expressed in pancreatic acinar cells. Biochem. Biophys. Res. Commun. 330: 832-838.
2. Sarkar, S.A., Kobberup, S., Wong, R., Lopez, A.D., Quayum, N., Still, T., Kutchma, A., Jensen, J.N., Gianani, R., Beattie, G.M., Jensen, J., Hayek, A. and Hutton, J.C. 2008. Global gene expression profiling and histochemical analysis of the developing human fetal pancreas. Diabetologia 51: 285-297.
3. Sorani, M.D., Manley, G.T. and Giacomini, K.M. 2008. Genetic variation in human aquaporins and effects on phenotypes of water homeostasis. Hum. Mutat. 29: 1108-1117.
4. Ishibashi, K. 2009. New members of mammalian aquaporins: AQP10-AQP12. Handb. Exp. Pharmacol. 190: 251-262.
5. Leyva-Vega, M., Gerfen, J., Thiel, B.D., Jurkiewicz, D., Rand, E.B., Pawlowska, J., Kaminska, D., Russo, P., Gai, X., Krantz, I.D., Kamath, B.M., Hakonarson, H., Haber, B.A. and Spinner, N.B. 2010. Genomic alterations in biliary atresia suggest region of potential disease susceptibility in 2q37.3. Am. J. Med. Genet. A 152A: 886-895.
6. Cerdà, J. and Finn, R.N. 2010. Piscine aquaporins: an overview of recent advances. J. Exp. Zool. A Ecol. Genet. Physiol. 313: 623-650.
7. Diede, S.J., Guenthoer, J., Geng, L.N., Mahoney, S.E., Marotta, M., Olson, J.M., Tanaka, H. and Tapscott, S.J. 2010. DNA methylation of developmental genes in pediatric medulloblastomas identified by denaturation analysis of methylation differences. Proc. Natl. Acad. Sci. USA 107: 234-239.

CHROMOSOMAL LOCATION

Genetic locus: AQP12A (human) mapping to 2q37.3.

PROTOCOLS

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

PRODUCT

AQP12A siRNA (h) is a target-specific 19-25 nt siRNA 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 AQP12A shRNA Plasmid (h): sc-95002-SH and AQP12A shRNA (h) Lentiviral Particles: sc-95002-V as alternate gene silencing 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

AQP12A siRNA (h) is recommended for the inhibition of AQP12A 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 AQP12A gene expression knockdown using RT-PCR Primer: AQP12A (h)-PR: sc-95002-PR (20 µl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

RESEARCH USE

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