

ABCA2 siRNA (m): sc-60112

BACKGROUND

The ATP binding cassette (ABC) transporters, or traffic ATPases, constitute an expansive family of proteins accountable for the transport of a wide variety of substrates across cell membranes in both prokaryotic and eukaryotic cells. They also aid in the regulation of lipid transport and membrane trafficking. The gene encoding ABCA2 (ATP-binding cassette 2), also designated ATP-binding cassette transporter 2, ABC transporter 2 and KIAA1062) is composed of 48 exons located within a genomic region of only 21 kb. Analysis of the presumed ABCA2 promoter sequence reveals possible binding sites for transcription factors that participate in the differentiation of myeloid and neural cells. Gene expression analysis in human macrophages shows that ABCA2 mRNA is procured during cholesterol import, indicating that ABCA2 is a cholesterol-responsive gene. Research suggests that ABCA2 plays a putative role in macrophage lipid metabolism and neural development.

REFERENCES

1. Kaminski, W.E., et al. 2001. Complete coding sequence, promoter region, and genomic structure of the human ABCA2 gene and evidence for sterol-dependent regulation in macrophages. *Biochem. Biophys. Res. Commun.* 281: 249-258.
2. Online Mendelian Inheritance in Man, OMIM[™]. 2002. Johns Hopkins University, Baltimore, MD. MIM Number: 600047. World Wide Web URL: <http://www.ncbi.nlm.nih.gov/omim/>
3. Boonstra, R., et al. 2004. Mitoxantrone resistance in a small cell lung cancer cell line is associated with ABCA2 upregulation. *Br. J. Cancer* 90: 2411-2417.
4. Chen, Z.J., et al. 2004. Association of ABCA2 expression with determinants of Alzheimer's disease. *FASEB J.* 18: 1129-1131.
5. Davis, W., et al. 2004. Human ATP-binding cassette transporter-2 (ABCA2) positively regulates low-density lipoprotein receptor expression and negatively regulates cholesterol esterification in Chinese hamster ovary cells. *Biochim. Biophys. Acta* 1683: 89-100.
6. Beljanski, V., et al. 2005. Characterization of the ATPase activity of human ATP-binding cassette transporter-2 (ABCA2). *In Vivo* 19: 657-660.
7. Macé, S., et al. 2005. ABCA2 is a strong genetic risk factor for early-onset Alzheimer's disease. *Neurobiol. Dis.* 18: 119-125.
8. Wang, Y., et al. 2005. Expression of ABCA2 protein in human vestibular schwannoma and peripheral nerve. *J. Neurol. Sci.* 232: 59-63.
9. Broccardo, C., et al. 2006. ABCA2 is a marker of neural progenitors and neuronal subsets in the adult rodent brain. *J. Neurochem.* 97: 345-355.

CHROMOSOMAL LOCATION

Genetic locus: Abca2 (mouse) mapping to 2 A3.

PROTOCOLS

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

PRODUCT

ABCA2 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 ABCA2 shRNA Plasmid (m): sc-60112-SH and ABCA2 shRNA (m) Lentiviral Particles: sc-60112-V as alternate gene silencing products.

For independent verification of ABCA2 (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-60112A, sc-60112B and sc-60112C.

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

ABCA2 siRNA (m) is recommended for the inhibition of ABCA2 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

ABCA2 (9A2): sc-130575 is recommended as a control antibody for monitoring of ABCA2 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).

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor ABCA2 gene expression knockdown using RT-PCR Primer: ABCA2 (m)-PR: sc-60112-PR (20 μ l). 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.