SANTA CRUZ BIOTECHNOLOGY, INC.

ABCG2 siRNA (h): sc-41151

BACKGROUND

ATP-binding cassette (ABC) transporters are an evolutionarily conserved family of proteins that catalyze the transport of molecules across extracellular and intracellular membranes through the energy of ATP hydrolysis. The ABC half-transporter, ABCG2, is also known as placenta-specific ABC transporter and breast cancer resistance protein (BCRP1). ABCG2 confers resistance for a variety of chemotherapeutic agents, including anthracyclines, mitoxantrone, bisantrene and topotecan. Under normal conditions, ABCG2 may serve a protective function by removing toxins from the cell, and plays an important role in regulating stem cell differentiation. ABCG2 is responsible for the side population (SP) phenotype and is widely expressed in a large variety of stem cells, making it an important stem cell marker. ABCG2 may have N-linked glycosylation and may dimerize *in vivo*. ABCG2 is abundantly expressed in placenta, liver, intestine and stem cells.

REFERENCES

1. Spangrude, G.J., et al. 1990. Resting and activated subsets of mouse multipotent hematopoietic stem cells. Proc. Natl. Acad. Sci. USA 87: 7433-7437.
2. Goodell, M.A., et al. 1997. Dye efflux studies suggest that hematopoietic stem cells expressing low or undetectable levels of CD34 antigen exist in multiple species. Nat. Med. 3: 1337-1345.
3. Hulspas, R., et al. 2000. Characterization of neurosphere cell phenotypes by flow cytometry. Cytometry 40: 245-250.

CHROMOSOMAL LOCATION

Genetic locus: ABCG2 (human) mapping to 4q22.1.

PRODUCT

ABCG2 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 ABCG2 shRNA Plasmid (h): sc-41151-SH and ABCG2 shRNA (h) Lentiviral Particles: sc-41151-V as alternate gene silencing products.

For independent verification of ABCG2 (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-41151A, sc-41151B and sc-41151C.

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

ABCG2 siRNA (h) is recommended for the inhibition of ABCG2 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.

GENE EXPRESSION MONITORING

ABCG2 (B-1): sc-377176 is recommended as a control antibody for monitoring of ABCG2 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 ABCG2 gene expression knockdown using RT-PCR Primer: ABCG2 (h)-PR: sc-41151-PR (20 µl, 430 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Wang, X.Q., et al. 2010. Octamer 4 (Oct4) mediates chemotherapeutic drug resistance in liver cancer cells through a potential Oct4-Akt-ATP-binding cassette G_2 pathway. Hepatology 52: 528-539.
2. Carina, V., et al. 2013. Multiple pluripotent stem cell markers in human anaplastic thyroid cancer: the putative upstream role of SOX2. Thyroid 23: 829-837.
3. Tonigold, M., et al. 2014. A cisplatin-resistant head and neck cancer cell line with cytoplasmic $p53^{mut}$ exhibits ATP-binding cassette transporter upregulation and high glutathione levels. J. Cancer Res. Clin. Oncol. 140: 1689-1704.
4. Skrypek, N., et al. 2015. The oncogenic receptor ErbB2 modulates gemcitabine and irinotecan/SN-38 chemoresistance of human pancreatic cancer cells via hCNT1 transporter and multidrug-resistance associated protein MRP-2. Oncotarget 6: 10853-10867.
5. Nagy, B.M., et al. 2017. Lack of ABCG2 leads to biventricular dysfunction and remodeling in response to hypoxia. Front. Physiol. 8: 98.
6. Nayak, D., et al. 2019. Quinacrine and curcumin synergistically increased the breast cancer stem cells death by inhibiting ABCG2 and modulating DNA damage repair pathway. Int. J. Biochem. Cell Biol. 119: 105682.
7. Wadhwa, B., et al. 2020. AKT isoforms have discrete expression in triple negative breast cancers and roles in cisplatin sensitivity. Oncotarget 11: 4178-4194.

RESEARCH USE

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