SANTA CRUZ BIOTECHNOLOGY, INC.

RDH8 siRNA (h): sc-97854

BACKGROUND

RDH8 (retinol dehydrogenase 8), also known as PRRDH (photoreceptor outer segment all-*trans* retinol dehydrogenase), is a 311 amino acid multi-pass membrane protein that belongs to the short-chain dehydrogenase/reductase (SDR) family of enzymes that catalyze the first step in the generation of retinaldehyde from retinol. Expressed in the outer segments of retinal photoreceptor cells, RDH8 functions as a retinol dehydrogenase that uses NADP to catalyze the conversion of *trans*-retinal to *trans*-retinol, a key rate-limiting step in the regeneration of rhodopsin. The gene encding RDH8 maps to human chromosome 19, which consists of over 63 million bases, houses approximately 1,400 genes and is recognized for having the greatest gene density of the human chromosomes. It is the genetic home for a number of immunoglobulin (Ig) superfamily members, including the killer cell and leukocyte Ig-like receptors, a number of ICAMs, the CEACAM and PSG family and Fc receptors (FcRs).

REFERENCES

1. Saari, J.C., Garwin, G.G., Van Hooser, J.P. and Palczewski, K. 1998. Reduction of all-*trans*-retinal limits regeneration of visual pigment in mice. Vision Res. 38: 1325-1333.
2. Rattner, A., Smallwood, P.M. and Nathans, J. 2000. Identification and characterization of all-*trans*-retinol dehydrogenase from photoreceptor outer segments, the visual cycle enzyme that reduces all-*trans*-retinal to all-*trans*-retinol. J. Biol. Chem. 275: 11034-11043.
3. Rando, R.R. 2001. The biochemistry of the visual cycle. Chem. Rev. 101: 1881-1896.
4. Perrault, I., Hanein, S., Gerber, S., Barbet, F., Ducroq, D., Dollfus, H., Hamel, C., Dufier, J.L., Munnich, A., Kaplan, J. and Rozet, J.M. 2004. Retinal dehydrogenase 12 (RDH12) mutations in leber congenital amaurosis. Am. J. Hum. Genet. 75: 639-646.
5. Han, W., Yip, S.P., Wang, J. and Yap, M.K. 2004. Using denaturing HPLC for SNP discovery and genotyping, and establishing the linkage disequilibrium pattern for the all-*trans*-retinol dehydrogenase (RDH8) gene. J. Hum. Genet. 49: 16-23.
6. Online Mendelian Inheritance in Man, OMIM™. 2004. Johns Hopkins University, Baltimore, MD. MIM Number: 608575. World Wide Web URL: http://www.ncbi.nlm.nih.gov/omim/
7. Maeda, A., Maeda, T., Imanishi, Y., Kuksa, V., Alekseev, A., Bronson, J.D., Zhang, H., Zhu, L., Sun, W., Saperstein, D.A., Rieke, F., Baehr, W. and Palczewski, K. 2005. Role of photoreceptor-specific retinol dehydrogenase in the retinoid cycle *in vivo*. J. Biol. Chem. 280: 18822-18832.
8. Persson, B., Kallberg, Y., Bray, J.E., Bruford, E., Dellaporta, S.L., Favia, A.D., Duarte, R.G., Jörnvall, H., Kavanagh, K.L., Kedishvili, N., Kisiela, M., Maser, E., Mindnich, R., Orchard, S., Penning, T.M., Thornton, J.M., et al. 2009. The SDR (short-chain dehydrogenase/reductase and related enzymes) nomenclature initiative. Chem. Biol. Interact. 178: 94-98.

CHROMOSOMAL LOCATION

Genetic locus: RDH8 (human) mapping to 19p13.2.

PRODUCT

RDH8 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 RDH8 shRNA Plasmid (h): sc-97854-SH and RDH8 shRNA (h) Lentiviral Particles: sc-97854-V as alternate gene silencing products.

For independent verification of RDH8 (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-97854A, sc-97854B and sc-97854C.

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

RDH8 siRNA (h) is recommended for the inhibition of RDH8 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 RDH8 gene expression knockdown using RT-PCR Primer: RDH8 (h)-PR: sc-97854-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.

PROTOCOLS

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