

RDH14 siRNA (h): sc-94559

BACKGROUND

RDH14 (retinol dehydrogenase 14) is a 336 amino acid protein that belongs to the short-chain dehydrogenases/reductases (SDR) family, which catalyze the transformation of retinol to retinal. The SDR family constitutes one of the largest enzyme superfamilies with presently over 46,000 members. Exhibiting an oxidoreductive catalytic activity towards retinoids, RDH14 is most efficient as an NADPH-dependent retinal reductase and displays high activity toward 9-*cis* and all-*trans*-retinol. Retinoids are chromophores involved in vision, transcriptional regulation and cellular differentiation. The RDH14 displays no steroid dehydrogenase activity. The RDH14 protein is expressed in brain, kidney, pancreas and placenta. The RDH14 gene is conserved in chimpanzee, canine, bovine, mouse, rat, chicken, zebrafish and *N. crassa*, and maps to human chromosome 2q24.2.

REFERENCES

1. Belyaeva, O.V. and Kedishvili, N.Y. 2002. Human pancreas protein 2 (PAN2) has a retinal reductase activity and is ubiquitously expressed in human tissues. *FEBS Lett.* 531: 489-493.
2. Haeseleer, F., Jang, G.F., Imanishi, Y., Driessen, C.A., Matsumura, M., Nelson, P.S. and Palczewski, K. 2002. Dual-substrate specificity short chain retinol dehydrogenases from the vertebrate retina. *J. Biol. Chem.* 277: 45537-45546.
3. Clark, H.F., Gurney, A.L., Abaya, E., Baker, K., Baldwin, D., Brush, J., Chen, J., Chow, B., Chui, C., Crowley, C., Currell, B., Deuel, B., Dowd, P., Eaton, D., Foster, J., Grimaldi, C., Gu, Q., Hass, P.E., Heldens, S., Huang, A., et al. 2003. The secreted protein discovery initiative (SPDI), a large-scale effort to identify novel human secreted and transmembrane proteins: a bioinformatics assessment. *Genome Res.* 13: 2265-2270.
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. Lyakhov, I.G., Krishnamachari, A. and Schneider, T.D. 2008. Discovery of novel tumor suppressor p53 response elements using information theory. *Nucleic Acids Res.* 36: 3828-3833.
6. Persson, B., Kallberg, Y., Bray, J.E., Bruford, E., Dellaporta, S.L., Favia, A.D., Duarte, R.G., Jönrvall, 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: RDH14 (human) mapping to 2p24.2.

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.

PRODUCT

RDH14 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 RDH14 shRNA Plasmid (h): sc-94559-SH and RDH14 shRNA (h) Lentiviral Particles: sc-94559-V as alternate gene silencing products.

For independent verification of RDH14 (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-94559A, sc-94559B and sc-94559C.

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

RDH14 siRNA (h) is recommended for the inhibition of RDH14 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 RDH14 gene expression knockdown using RT-PCR Primer: RDH14 (h)-PR: sc-94559-PR (20 μ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.