

# ROR $\alpha$ 1 siRNA (h): sc-38864

## BACKGROUND

Retinoids are metabolites of vitamin A (retinol) and represent an important class of signaling molecule during vertebrate development and tissue differentiation. A large group of nuclear transcription factors, including vitamin D<sub>3</sub> receptor (VDR), thyroid hormone receptor (TR), RAR, RXR and ecdysone receptor, have a high affinity for retinoic acids and are members of the steroid receptor superfamily. This family acts by directly associating with DNA sequences known as hormone response elements (HREs) and bind DNA as either homo- or heterodimers. ROR $\alpha$  is a member of the steroid receptor superfamily and is classified as an "orphan receptor" due to the lack of a defined ligand. Two isoforms of ROR $\alpha$  have been described and are designated ROR $\alpha$ 1 and ROR $\alpha$ 2. ROR $\alpha$ , also referred to as RZR, binds DNA as a monomer at consensus ROR $\alpha$  response elements (ROREs).

## REFERENCES

1. Koelle, M.R., et al. 1991. The *Drosophila* EcR gene encodes an ecdysone receptor, a new member of the steroid receptor superfamily. *Cell* 67: 59-77.
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3. Bhat, M.K., et al. 1994. Phosphorylation enhances the target gene sequence-dependent dimerization of thyroid hormone receptor with retinoid X receptor. *Proc. Natl. Acad. Sci. USA* 91: 7927-7931.
4. Mangelsdorf, D.J., et al. 1995. The nuclear receptor superfamily: the second decade. *Cell* 83: 835-839.
5. Leblanc, B.P., et al. 1995. 9-*cis* retinoic acid signaling: changing partners causes some excitement. *Genes Dev.* 9: 1811-1816.
6. Mangelsdorf, D.J., et al. 1995. The RXR heterodimers and orphan receptors. *Cell* 83: 841-850.
7. Giguere, V., et al. 1995. Determinants of target gene specificity for ROR $\alpha$ 1: monomeric DNA binding by an orphan nuclear receptor. *Mol. Cell. Biol.* 15: 2517-2526.
8. Schrader, M., et al. 1996. Identification of natural monomeric response elements of the nuclear receptor RZR/ROR. They also bind COUP-TF homodimers. *J. Biol. Chem.* 271: 19732-19736.

## CHROMOSOMAL LOCATION

Genetic locus: RORA (human) mapping to 15q22.2.

## PRODUCT

ROR $\alpha$ 1 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  $\mu$ M solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see ROR $\alpha$ 1 shRNA Plasmid (h): sc-38864-SH and ROR $\alpha$ 1 shRNA (h) Lentiviral Particles: sc-38864-V as alternate gene silencing products.

For independent verification of ROR $\alpha$ 1 (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-38864A, sc-38864B and sc-38864C.

## 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  $\mu$ l of the RNase-free water provided. Resuspension of the siRNA duplex in 330  $\mu$ l of RNase-free water makes a 10  $\mu$ M solution in a 10  $\mu$ M Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

## APPLICATIONS

ROR $\alpha$ 1 siRNA (h) is recommended for the inhibition of ROR $\alpha$ 1 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  $\mu$ M in 66  $\mu$ 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 ROR $\alpha$ 1 gene expression knockdown using RT-PCR Primer: ROR $\alpha$ 1 (h)-PR: sc-38864-PR (20  $\mu$ l, 428 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Benderdour, M., et al. 2011. Nuclear receptor retinoid-related orphan receptor  $\alpha$ 1 modulates the metabolic activity of human osteoblasts. *J. Cell. Biochem.* 112: 2160-2169.
2. Sarachana, T. and Hu, V.W. 2013. Genome-wide identification of transcriptional targets of RORA reveals direct regulation of multiple genes associated with autism spectrum disorder. *Mol. Autism* 4: 14.

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.