



# COL11A1 siRNA (h): sc-72956

## BACKGROUND

Collagen Type XI is an 1,806 amino acid protein belonging to the fibrillar collagen family. Collagen Type XI is thought to play an important role in fibrillogenesis by controlling lateral growth of collagen II fibrils. This protein forms trimers composed of three different chains:  $\alpha$  1(XI),  $\alpha$  2(XI), and  $\alpha$  3(XI).  $\alpha$  3(XI) is a post-translational modification of  $\alpha$  1(II).  $\alpha$  1(V) can also be found instead of  $\alpha$  3(XI). Collagen Type XI has three named isoforms (A,B,C) and additional isoforms seem to exist, stemming from alternative usage of exon IIA or exon IIB. Transcripts containing exon IIA or IIB are present in cartilage, but exon IIB is preferentially utilized in transcripts from tendon. Collagen Type XI contains a single collagen binding TSP N-terminal (TSPN) domain. Collagen Type XI is expressed in cartilage, placenta and some tumor or virally transformed cell lines. Isoform expression can be tissue specific. Defects in the COL11A gene are the cause of Stickler syndrome type 2 (STL2), or beaded vitreous type, due to the presence of irregularly thickened fiber bundles throughout vitreous cavity. Stickler syndrome (hereditary progressive arthro-ophthalmopathy) is an autosomal dominant disorder characterized by progressive myopia beginning in the first decade of life, vitreo-retinal degeneration, retinal detachment, cleft palate, midfacial hypoplasia, osteoarthritis and sensorineural hearing loss. Defects in COL11A are also the cause of Marshall syndrome, a disorder similar to Stickler syndrome.

## CHROMOSOMAL LOCATION

Genetic locus: COL11A1 (human) mapping to 1p21.1.

## PRODUCT

COL11A1 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 COL11A1 shRNA Plasmid (h): sc-72956-SH and COL11A1 shRNA (h) Lentiviral Particles: sc-72956-V as alternate gene silencing products.

For independent verification of COL11A1 (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-72956A, sc-72956B and sc-72956C.

## STORAGE AND RESUSPENSION

Store lyophilized siRNA duplex at  $-20^{\circ}$  C with desiccant. Stable for at least one year from the date of shipment. Once resuspended, store at  $-20^{\circ}$  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

COL11A1 siRNA (h) is recommended for the inhibition of COL11A1 expression in human cells.

## RESEARCH USE

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

## 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 COL11A1 gene expression knockdown using RT-PCR Primer: COL11A1 (h)-PR: sc-72956-PR (20  $\mu$ l, 330 bp). Annealing temperature for the primers should be 55-60 $^{\circ}$  C and the extension temperature should be 68-72 $^{\circ}$  C.

## SELECT PRODUCT CITATIONS

- Zadran, S., et al. 2013. miRNA and mRNA cancer signatures determined by analysis of expression levels in large cohorts of patients. *Proc. Natl. Acad. Sci. USA* 110: 19160-19165.
- Wu, Y.H., et al. 2015. COL11A1 confers chemoresistance on ovarian cancer cells through the activation of Akt/c/EBP $\beta$  pathway and PDK1 stabilization. *Oncotarget* 6: 23748-23763.
- Shen, L., et al. 2016. COL11A1 is overexpressed in recurrent non-small cell lung cancer and promotes cell proliferation, migration, invasion and drug resistance. *Oncol. Rep.* 36: 877-885.
- Wu, Y.H., et al. 2023. The downregulation of miR-509-3p expression by Collagen Type XI  $\alpha$  1-regulated hypermethylation facilitates cancer progression and chemoresistance via the DNA methyltransferase 1/Small ubiquitin-like modifier-3 axis in ovarian cancer cells. *J. Ovarian Res.* 16: 124.
- Wu, Y.H., et al. 2023. The downregulation of miR-509-3p expression by Collagen Type XI  $\alpha$  1-regulated hypermethylation facilitates cancer progression and chemoresistance via the DNA methyltransferase 1/Small ubiquitin-like modifier-3 axis in ovarian cancer cells. *Res. Sq.* E-published.

## PROTOCOLS

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