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COL1A1 siRNA (h): sc-44041

BACKGROUND

The extensive family of COL gene products (collagens) is composed of several chain types, including fibril-forming interstitial collagens (types I, II, III and V) and basement membrane collagens (type IV), each type containing multiple isoforms. Collagens are fibrous, extracellular matrix proteins with high tensile strength and are the major components of connective tissue, such as tendons and cartilage. All collagens contain a triple helix domain and frequently show lateral self-association in order to form complex connective tissues. Several collagens also play a role in cell adhesion, important for maintaining normal tissue architecture and function.

REFERENCES

- Bellamy, G. and Bornstein, P. 1971. Evidence for procollagen, a biosynthetic precursors of collagen. *Proc. Natl. Acad. Sci. USA* 68: 1138-1142.
- Church, R.L., et al. 1971. Collagen biosynthesis: synthesis and secretion of a high molecular weight collagen precursor (procollagen). *Proc. Natl. Acad. Sci. USA* 68: 2638-2642.
- Bornstein, P., et al. 1972. Procollagen: conversion of the precursor to collagen by a neutral protease. *Science* 175: 544-546.
- Bateman, J.F., et al. 1996. Collagen superfamily. In Comper, W.D., ed. *Extracellular Matrix, Vol 2: Molecular Components and Interactions*. Amsterdam: Harwood Academic Publishers, 2: 22-67.
- McCarthy, J.B., et al. 1996. Cell adhesion to collagenous matrices. *Biopolymers* 40: 371-381.
- Engel, J. 1997. Versatile collagens in invertebrates. *Science* 277: 1785-1786.

CHROMOSOMAL LOCATION

Genetic locus: COL1A1 (human) mapping to 17q21.33.

PRODUCT

COL1A1 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 COL1A1 shRNA Plasmid (h): sc-44041-SH and COL1A1 shRNA (h) Lentiviral Particles: sc-44041-V as alternate gene silencing products.

For independent verification of COL1A1 (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-44041A, sc-44041B and sc-44041C.

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

COL1A1 siRNA (h) is recommended for the inhibition of COL1A1 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.

GENE EXPRESSION MONITORING

COL1A1 (3G3): sc-293182 is recommended as a control antibody for monitoring of COL1A1 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).

To ensure optimal results, the following support reagents are recommended: 1) Western Blotting: use m-IgG κ BP-HRP: sc-516102 or m-IgG κ BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker[™] Molecular Weight Standards: sc-2035, UltraCruz[®] Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG κ BP-FITC: sc-516140 or m-IgG κ BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz[®] Mounting Medium: sc-24941 or UltraCruz[®] Hard-set Mounting Medium: sc-359850.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor COL1A1 gene expression knockdown using RT-PCR Primer: COL1A1 (h)-PR: sc-44041-PR (20 μ l, 501 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

- Guo, Y., et al. 2019. Improved radiotherapy sensitivity of nasopharyngeal carcinoma cells by miR-29-3p targeting COL1A1 3'-UTR. *Med. Sci. Monit.* 25: 3161-3169.
- Yuan, Y., et al. 2020. Engineering blood outgrowth endothelial cells to optimize endothelial nitric oxide synthase and extracellular matrix production for coating of blood contacting surfaces. *Acta Biomater.* E-published.

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.