

# Integrin $\alpha 3$ siRNA (h): sc-35684

## BACKGROUND

Integrins are heterodimers composed of noncovalently associated transmembrane  $\alpha$  and  $\beta$  subunits. The 16  $\alpha$  and 8  $\beta$  subunits heterodimerize to produce more than 20 different receptors. Most integrin receptors bind ligands that are components of the extracellular matrix, including Fibronectin, collagen and Vitronectin. Certain integrins can also bind to soluble ligands such as Fibrinogen, or to counterreceptors on adjacent cells such as the intracellular adhesion molecules (ICAMs), leading to aggregation of cells. Ligands serve to cross-link or cluster integrins by binding to adjacent integrin receptors; both receptor clustering and ligand occupancy are necessary for the activation of integrin-mediated responses. In addition to mediating cell adhesion and cytoskeletal organization, integrins function as signaling receptors. Signals transduced by integrins play a role in many biological processes, including cell growth, differentiation, migration and apoptosis. The Integrin  $\alpha 3$  chain, also known as very late (activation) antigen 3 (VLA-3), very common antigen 2 (VCA-2), extracellular matrix receptor 1 (ECMR1) and galactoprotein  $\beta 3$  (GAPB3), undergoes posttranslational cleavage in the extracellular domain to yield disulfide-linked light and heavy chains that join with  $\beta 1$  to form an integrin that interacts with many extracellular-matrix proteins.

## CHROMOSOMAL LOCATION

Genetic locus: ITGA3 (human) mapping to 17q21.33.

## PRODUCT

Integrin  $\alpha 3$  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 Integrin  $\alpha 3$  shRNA Plasmid (h): sc-35684-SH and Integrin  $\alpha 3$  shRNA (h) Lentiviral Particles: sc-35684-V as alternate gene silencing products.

For independent verification of Integrin  $\alpha 3$  (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-35684A, sc-35684B and sc-35684C.

## 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

Integrin  $\alpha 3$  siRNA (h) is recommended for the inhibition of Integrin  $\alpha 3$  expression in human cells.

## PROTOCOLS

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

## 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.

## GENE EXPRESSION MONITORING

Integrin  $\alpha 3$  (A-3): sc-374242 is recommended as a control antibody for monitoring of Integrin  $\alpha 3$  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).

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor Integrin  $\alpha 3$  gene expression knockdown using RT-PCR Primer: Integrin  $\alpha 3$  (h)-PR: sc-35684-PR (20  $\mu$ l, 436 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

- Freitas, V.M., et al. 2007. SIKVAV, a laminin  $\alpha 1$ -derived peptide, interacts with integrins and increases protease activity of a human salivary gland adenoid cystic carcinoma cell line through the ERK 1/2 signaling pathway. *Am. J. Pathol.* 171: 124-138.
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- Kim, S.H., et al. 2012. Antagonism of VEGF-A—induced increase in vascular permeability by an Integrin  $\alpha 3\beta 1$ -Shp-1-cAMP/PKA pathway. *Blood* 120: 4892-4902.
- Kim, H.I., et al. 2015. Growth-stimulatory activity of TIMP-2 is mediated through c-Src activation followed by activation of FAK, PI3-kinase/Akt, and ERK1/2 independent of MMP inhibition in lung adenocarcinoma cells. *Oncotarget* 6: 42905-42922.
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- Lee, J., et al. 2019. Blockade of Integrin  $\alpha 3$  attenuates human pancreatic cancer via inhibition of EGFR signalling. *Sci. Rep.* 9: 2793.
- Yang, J., et al. 2021. Targeting of the Cox-2/PGE2 axis enhances the anti-tumor activity of T7 peptide *in vitro* and *in vivo*. *Drug Deliv.* 28: 844-855.
- Wang, W., et al. 2022. Magnesium cationic cue enriched interfacial tissue microenvironment nurtures the osseointegration of  $\gamma$ -irradiated allograft bone. *Bioact. Mater.* 10: 32-47.

## RESEARCH USE

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