

# PDGFR- $\beta$ siRNA (h): sc-29442

## BACKGROUND

Platelet-derived growth factor (PDGF) is a mitogen for mesenchyme- and glia-derived cells. PDGF consists of two chains, A and B, which dimerize to form functionally distinct isoforms PDGF-AA, PDGF-AB and PDGF-BB. These three isoforms bind with different affinities to two receptor types, PDGFR- $\alpha$  and - $\beta$ , which are endowed with protein tyrosine kinase domains. PDGFR- $\alpha$  can bind to both A and B subunits of PDGF, while PDGFR- $\beta$  can only bind the B subunit. Ligand binding promotes either homo- or heterodimerization of the PDGF receptors in a specific manner. PDGF-AA induces the dimerization of two  $\alpha$  receptors, PDGF-AB induces dimerization of  $\alpha\alpha$  and  $\alpha\beta$ , and PDGF-BB induces the formation of three types of dimers,  $\alpha\alpha$ ,  $\alpha\beta$  and  $\beta\beta$ . Translocation of the PDGFR- $\beta$  gene with the TEL gene is linked with chronic myelomonocytic leukemia (CMML), a myelodysplastic syndrome, and demonstrates the oncogenic potential of the PDGF receptors.

## REFERENCES

- Ross, R., et al. 1986. The biology of platelet-derived growth factor. *Cell* 46: 155-169.
- Hart, C.E., et al. 1988. Two classes of PDGF receptor recognize different isoforms of PDGF. *Science* 240: 1529-1531.
- Heldin, C.H., et al. 1989. Dimerization of B-type platelet-derived growth factor receptors occurs after ligand binding and is closely associated with receptor kinase activation. *J. Biol. Chem.* 264: 8905-8912.

## CHROMOSOMAL LOCATION

Genetic locus: PDGFRB (human) mapping to 5q32.

## PRODUCT

PDGFR- $\beta$  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 PDGFR- $\beta$  shRNA Plasmid (h): sc-29442-SH and PDGFR- $\beta$  shRNA (h) Lentiviral Particles: sc-29442-V as alternate gene silencing products.

For independent verification of PDGFR- $\beta$  (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-29442A, sc-29442B and sc-29442C.

## 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

PDGFR- $\beta$  siRNA (h) is recommended for the inhibition of PDGFR- $\beta$  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.

## GENE EXPRESSION MONITORING

PDGFR- $\beta$  (D-6): sc-374573 is recommended as a control antibody for monitoring of PDGFR- $\beta$  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 PDGFR- $\beta$  gene expression knockdown using RT-PCR Primer: PDGFR- $\beta$  (h)-PR: sc-29442-PR (20  $\mu$ l, 423 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

- Miura, Y., et al. 2006. Mesenchymal stem cell-organized bone marrow elements: an alternative hematopoietic progenitor resource. *Stem Cells* 24: 2428-2436.
- Ahn, J.H. and Lee, M. 2014. The siRNA-mediated downregulation of N-Ras sensitizes human melanoma cells to apoptosis induced by selective BRAF inhibitors. *Mol. Cell. Biochem.* 392: 239-247.
- Goldsmith, Z.K., et al. 2018. Targeting the platelet-derived growth factor- $\beta$  stimulatory circuitry to control retinoblastoma seeds. *Invest. Ophthalmol. Vis. Sci.* 59: 4486-4495.
- Madarampalli, B., et al. 2019. Interactions between cadherin-11 and platelet-derived growth factor receptor- $\alpha$  signaling link cell adhesion and proliferation. *Biochim. Biophys. Acta Mol. Basis Dis.* 1865: 1516-1524.
- Wu, K., et al. 2020. Endothelial platelet-derived growth factor-mediated activation of smooth muscle platelet-derived growth factor receptors in pulmonary arterial hypertension. *Pulm. Circ.* 10: 2045894020948470.
- Panchbhai, N., et al. 2021. P68 RNA helicase facilitates breast cancer progression by promoting proliferation and migration via PDGFR- $\beta$ /AR axis. *J. Cancer* 12: 6543-6552.
- Smyth, L.C.D., et al. 2022. Characterisation of PDGF-BB:PDGFR $\beta$  signalling pathways in human brain pericytes: evidence of disruption in Alzheimer's disease. *Commun. Biol.* 5: 235.

## RESEARCH USE

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