

# PDGFR- $\alpha$ siRNA (m): sc-29444

## 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 to chronic myelomonocytic leukemia (CMML), a myelodysplastic syndrome, and demonstrates the oncogenic potential of the PDGF receptors.

## REFERENCES

1. Ross, R., et al. 1986. The biology of platelet-derived growth factor. *Cell* 46: 155-169.
2. Hart, C.E., et al. 1988. Two classes of PDGF receptor recognize different isoforms of PDGF. *Science* 240: 1529-1531.
3. Heldin, C., et al. 1988. Binding of different dimeric forms of PDGF to human fibroblasts: evidence for two separate receptor types. *EMBO J.* 7: 1387-1393.
4. Rupp, E., et al. 1994. A unique autophosphorylation site in the platelet-derived growth factor  $\alpha$  receptor from a heterodimeric receptor complex. *Eur. J. Biochem.* 225: 29-41.

## CHROMOSOMAL LOCATION

Genetic locus: *Pdgfra* (mouse) mapping to 5 C3.3.

## PRODUCT

PDGFR- $\alpha$  siRNA (m) 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- $\alpha$  shRNA Plasmid (m): sc-29444-SH and PDGFR- $\alpha$  shRNA (m) Lentiviral Particles: sc-29444-V as alternate gene silencing products.

For independent verification of PDGFR- $\alpha$  (m) gene silencing results, we also provide the individual siRNA duplex components. Each is available as 3.3 nmol of lyophilized siRNA. These include: sc-29444A, sc-29444B and sc-29444C.

## 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- $\alpha$  siRNA (m) is recommended for the inhibition of PDGFR- $\alpha$  expression in mouse 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- $\alpha$  (C-9): sc-398206 is recommended as a control antibody for monitoring of PDGFR- $\alpha$  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 $\kappa$  BP-HRP: sc-516102 or m-IgG $\kappa$  BP-HRP (Cruz Marker): sc-516102-CM (dilution range: 1:1000-1:10000), Cruz Marker<sup>TM</sup> Molecular Weight Standards: sc-2035, UltraCruz<sup>®</sup> Blocking Reagent: sc-516214 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use m-IgG $\kappa$  BP-FITC: sc-516140 or m-IgG $\kappa$  BP-PE: sc-516141 (dilution range: 1:50-1:200) with UltraCruz<sup>®</sup> Mounting Medium: sc-24941 or UltraCruz<sup>®</sup> Hard-set Mounting Medium: sc-359850.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PDGFR- $\alpha$  gene expression knockdown using RT-PCR Primer: PDGFR- $\alpha$  (m)-PR: sc-29444-PR (20  $\mu$ l, 488 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## SELECT PRODUCT CITATIONS

1. Li, A., et al. 2014. PDGF-AA promotes osteogenic differentiation and migration of mesenchymal stem cell by down-regulating PDGFR $\alpha$  and derepressing BMP-Smad1/5/8 signaling. *PLoS ONE* 9: e113785.
2. Oak, P., et al. 2017. Attenuated PDGF signaling drives alveolar and microvascular defects in neonatal chronic lung disease. *EMBO Mol. Med.* 9: 1504-1520.

## 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.