

# PDGF-A (hBA-124): sc-4946

## BACKGROUND

PDGF is a mitogen for mesenchyme- and glia-derived cells. It consists of two disulfide-bonded polypeptide chains, A and B, and occurs as three isoforms, PDGF AA, PDGF AB and PDGF BB. The three isoforms bind with different affinities to two receptor types, A and B, which are structurally related and endowed with protein-tyrosine kinase domains. Ligand binding induces activation of the receptor kinases by formation of receptor dimers; the A subunit of PDGF binds only to A receptors with high affinity, whereas the B subunit can bind to both A and B receptors. Evidence suggests that PDGF may function as a neurotrophic factor. The fact that PDGF-A receptors are expressed in oligodendrocyte progenitor cells, whereas PDGF-B receptors are expressed on neurons, suggests that the different isoforms of PDGF may regulate growth and differentiation of different cell types in the developing central nervous system by paracrine and autocrine routes.

## REFERENCES

- Rorsman, F., Bywater, M., Knott, T.J., Scott, J. and Betsholtz, C. 1988. Structural characterization of the human platelet-derived growth factor A-chain cDNA and gene: alternative exon usage predicts two different precursor proteins. *Mol. Cell. Biol.* 8: 571-577.
- Bonthron, D.T., Morton, C.C., Orkin, S.H. and Collins, T. 1988. Platelet-derived growth factor A chain: gene structure, chromosomal location, and basis for alternative mRNA splicing. *Proc. Natl. Acad. Sci. USA* 85: 1492-1496.
- Andersson, M., Ostman, A., Bäckström, G., Hellman, U., George-Nascimento, C., Westermarck, B. and Heldin, C.H. 1992. Assignment of interchain disulfide bonds in platelet-derived growth factor (PDGF) and evidence for agonist activity of monomeric PDGF. *J. Biol. Chem.* 267: 11260-11266.
- Perros, F., Montani, D., Dorfmueller, P., Durand-Gasselien, I., Tcherakian, C., Le Pavec, J., Mazmanian, M., Fadel, E., Mussot, S., Mercier, O., Hervé, P., Emilie, D., Eddahibi, S., Simonneau, G., Souza, R. and Humbert, M. 2008. Platelet-derived growth factor expression and function in idiopathic pulmonary arterial hypertension. *Am. J. Respir. Crit. Care Med.* 178: 81-88.
- Soroceanu, L., Akhavan, A. and Cobbs, C.S. 2008. Platelet-derived growth factor- $\alpha$  receptor activation is required for human cytomegalovirus infection. *Nature* 455: 391-395.
- Karvinen, H., Rutanen, J., Leppänen, O., Lach, R., Levonen, A.L., Eriksson, U. and Ylä-Herttuala, S. 2009. PDGF-C and -D and their receptors PDGFR- $\alpha$  and PDGFR- $\beta$  in atherosclerotic human arteries. *Eur. J. Clin. Invest.* 39: 320-327.
- Kowarik, M., Onofri, C., Colaco, T., Stalla, G.K. and Renner, U. 2009. Platelet-derived growth factor (PDGF) and PDGF receptor expression and function in folliculostellate pituitary cells. *Exp. Clin. Endocrinol. Diabetes* 118: 113-120.
- Frost, E.E., Zhou, Z., Krasnesky, K. and Armstrong, R.C. 2009. Initiation of oligodendrocyte progenitor cell migration by a PDGF-A activated extracellular regulated kinase (ERK) signaling pathway. *Neurochem. Res.* 34: 169-181.

## CHROMOSOMAL LOCATION

Genetic locus: PDGFA (human) mapping to 7p22.3; Pdgfa (mouse) mapping to 5 G2.

## SOURCE

PDGF-A (hBA-124) is produced in *E. coli* as 41 kDa biologically active, tagged fusion protein corresponding to 125 amino acids of PDGF-A of human origin.

## PRODUCT

PDGF-A (hBA-124) is purified from bacterial lysates (>98%); supplied as 50  $\mu$ g purified protein.

## Biological Activity

PDGF-A (hBA-124) is biologically active as determined by the dose-dependent stimulation of thymidine uptake by BALB/c 3T3 cells at < 1 ng/ml, corresponding to a specific activity of > 1 x 10<sup>6</sup> units/mg.

## RECONSTITUTION

In order to avoid freeze/thaw damaging of the active protein, dilute protein when first used to desired working concentration. Either a sterile filtered standard buffer (such as 50mM TRIS or 1X PBS) or water can be used for the dilution. Store any thawed aliquot in refrigeration at 2° C to 8° C for up to four weeks, and any frozen aliquot at -20° C to -80° C for up to one year. It is recommended that frozen aliquots be given an amount of standard cryopreservative (such as Ethylene Glycol or Glycerol 5-20% v/v), and refrigerated samples be given an amount of carrier protein (such as heat inactivated FBS or BSA to 0.1% v/v) or non-ionic detergent (such as Triton X-100 or Tween 20 to 0.005% v/v), to aid stability during storage.

## SELECT PRODUCT CITATIONS

- Zhang, M., Sheng, X., Zhang, H., Wang, Q., Xu, M., Weng, Q., Watanabe, G. and Taya, K. 2012. Seasonal changes in morphology and immunoreactivity of PDGF-A and its receptor PDGFR- $\alpha$  in the epididymis of wild ground squirrels (*Citellus dauricus Brandt*). *J. Reprod Dev.* 58: 353-359.

## STORAGE

Store desiccated at -20° C. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## 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.