

group IVB sPLA₂ siRNA (h): sc-90277

BACKGROUND

Phospholipase A₂s (PLA₂s) constitute a family of esterases that hydrolyze the sn-2-acyl ester bond in glycerophospholipid molecules. These enzymes are generally calcium-dependent and have been found both intra- and extracellularly. By hydrolyzing the sn-2 bond in glycerophospholipids, PLA₂s release fatty acids. One such fatty acid, arachidonic acid, generates substrates for the initiation of the arachidonic acid cascade that produces various eicosanoids, many of which are potent mediators of inflammation. As a member of the PLA₂ family, group IVB sPLA₂, also known as cPLA₂-β (cytosolic phospholipase A₂ β) or PLA2G4B (phospholipase A₂ group IVB), is a 781 amino acid cytoplasmic protein that is widely expressed, with high levels found in brain, liver, heart, cerebellum and pancreas. Containing one C2 domain, which participates in calcium and lipid binding, and a PLA₂c domain, group IVB sPLA modulates enzyme activity upon stimulation by cytosolic Ca²⁺.

REFERENCES

1. Henrikson, R.L., Krueger, E.T. and Keim, P.S. 1977. Amino acid sequence of phospholipase A₂-α from the venom of *Crotalus adamanteus*. A new classification of phospholipases A₂ based upon structural determinants. *J. Biol. Chem.* 252: 4913-4921.
2. Henrikson, R.L. and Kezdy, F.J. 1990. A novel bifunctional mechanism of surface recognition by phospholipase A₂. *Adv. Exp. Med. Biol.* 279: 37-47.
3. Sharp, J.D., White, D.L., Chiou, X.G., Goodson, T., Gamboa, G.C., McClure, D., Burgett, S., Hoskins, J., Skatrud, P.L. and Sportsman, J.R. 1991. Molecular cloning and expression of human Ca²⁺-sensitive cytosolic phospholipase A₂. *J. Biol. Chem.* 266: 14850-14853.
4. Mukherjee, A.B., Cordella-Miele, E. and Miele, L. 1992. Regulation of extracellular phospholipase A₂ activity: implications for inflammatory diseases. *DNA Cell Biol.* 11: 233-243.
5. Pickard, R.T., Striffler, B.A., Kramer, R.M. and Sharp, J.D. 1999. Molecular cloning of two new human paralogs of 85-kDa cytosolic phospholipase A₂. *J. Biol. Chem.* 274: 8823-8831.
6. Song, C., Chang, X.J., Bean, K.M., Proia, M.S., Knopf, J.L. and Kriz, R.W. 1999. Molecular characterization of cytosolic phospholipase A₂-β. *J. Biol. Chem.* 274: 17063-17067.
7. Wooton-Kee, C.R., Boyanovsky, B.B., Nasser, M.S., de Villiers, W.J. and Webb, N.R. 2004. Group V sPLA₂ hydrolysis of low-density lipoprotein results in spontaneous particle aggregation and promotes macrophage foam cell formation. *Arterioscler. Thromb. Vasc. Biol.* 24: 762-767.
8. Ghosh, M., Loper, R., Gelb, M.H. and Leslie, C.C. 2006. Identification of the expressed form of human cytosolic phospholipase A₂β (cPLA₂β): cPLA₂β3 is a novel variant localized to mitochondria and early endosomes. *J. Biol. Chem.* 281: 16615-16624.

CHROMOSOMAL LOCATION

Genetic locus: PLA2G4B (human) mapping to 15q14.

RESEARCH USE

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

PRODUCT

group IVB sPLA₂ 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 μM solution once resuspended using protocol below. Suitable for 50-100 transfections. Also see group IVB sPLA₂ shRNA Plasmid (h): sc-90277-SH and group IVB sPLA₂ shRNA (h) Lentiviral Particles: sc-90277-V as alternate gene silencing products.

For independent verification of group IVB sPLA₂ (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-90277A, sc-90277B and sc-90277C.

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 μl of the RNase-free water provided. Resuspension of the siRNA duplex in 330 μl of RNase-free water makes a 10 μM solution in a 10 μM Tris-HCl, pH 8.0, 20 mM NaCl, 1 mM EDTA buffered solution.

APPLICATIONS

group IVB sPLA₂ siRNA (h) is recommended for the inhibition of group IVB sPLA₂ 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 μM in 66 μl. 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.

RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor group IVB sPLA₂ gene expression knockdown using RT-PCR Primer: group IVB sPLA₂ (h)-PR: sc-90277-PR (20 μl). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.