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# PLC $\delta$ 4 siRNA (m): sc-45854

## BACKGROUND

Phosphoinositide-specific phospholipase C (PLC) plays a crucial role in the initiation of receptor-mediated signal transduction through the generation of the two second messengers, inositol 1,4,5-triphosphate (IP3) and diacylglycerol (DAG) from phosphatidylinositol 4,5-bisphosphate. There are several mammalian PLC proteins, including PLC  $\beta$ 1, PLC  $\beta$ 2, PLC  $\beta$ 3, PLC  $\beta$ 4, PLC $\gamma$ 1, PLC $\gamma$ 2, PLC  $\delta$ 1, PLC  $\delta$ 3, PLC  $\delta$ 4 and PLC $\epsilon$ . PLC  $\delta$ 1, a calcium signal amplifier, is activated by an atypical GTP-binding protein and functions as an effector for GTP-binding protein transglutaminase II-mediated oxytocin receptor and  $\alpha_{1B}$ -adrenoreceptor signaling. PLC  $\delta$ 1 is highly expressed in brain, heart, lung and testis and is abnormally accumulated in autopsied brains with Alzheimer's disease (AD), suggesting that it may play a role in the pathology of AD. Both PLC  $\delta$ 3 and PLC  $\delta$ 4 contain several functional domains through which they bind calcium as a cofactor and catalyze the creation of DAG and IP3, playing an essential role in signal transduction. PLC  $\delta$ 4 is highly expressed in skeletal muscle and kidney tissue, as well as in corneal epithelial cells, suggesting a role in the regulation of kidney and ocular function.

## REFERENCES

1. Lee, K.H., et al. 1995. Evidence suggesting a role for phospholipase C isozyme, PLC  $\delta$ 1 in corticomedullary osmotic gradients in rat kidneys. *Biochem. Mol. Biol. Int.* 37: 25-31.
2. Liu N., et al. 1996. A new phospholipase C  $\delta$ 4 is induced at S phase of the cell cycle and appears in the nucleus. *J. Biol. Chem.* 1: 355-360.
3. Lee, K.H., et al. 1997. Attenuation of renomedullary phospholipase C isozyme, PLC  $\delta$ 1, in spontaneously hypertensive rats. *Biochem. Mol. Biol. Int.* 43: 741-747.
4. Matecki, A., et al. 1997. Effect of sphingomyelin and its metabolites on the activity of human recombinant PLC  $\delta$ 1. *Int. J. Biochem. Cell Biol.* 29: 815-828.
5. Tachibana T., et al. 2002. Analysis of gene expression following spinal cord injury in rat using complementary DNA microarray. *Neurosci. Lett.* 327: 133-137.
6. Leung, D.W., et al. 2004. Phospholipase C  $\delta$ 4 overexpression upregulates ErbB1/2 expression, Erk signaling pathway and proliferation in MCF-7 cells. *Mol. Cancer* 3: 15.

## CHROMOSOMAL LOCATION

Genetic locus: Plcd4 (mouse) mapping to 1 C3.

## PRODUCT

PLC  $\delta$ 4 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 PLC  $\delta$ 4 shRNA Plasmid (m): sc-45854-SH and PLC  $\delta$ 4 shRNA (m) Lentiviral Particles: sc-45854-V as alternate gene silencing products.

For independent verification of PLC  $\delta$ 4 (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-45854A, sc-45854B and sc-45854C.

## 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

PLC  $\delta$ 4 siRNA (m) is recommended for the inhibition of PLC  $\delta$ 4 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

PLC  $\delta$ 4 (H-250): sc-30063 is recommended as a control antibody for monitoring of PLC  $\delta$ 4 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 (secondary) reagents are recommended: 1) Western Blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto A Blocking Reagent: sc-2333 and Western Blotting Luminol Reagent: sc-2048. 2) Immunofluorescence: use goat anti-rabbit IgG-FITC: sc-2012 (dilution range: 1:100-1:400) or goat anti-rabbit IgG-TR: sc-2780 (dilution range: 1:100-1:400) with UltraCruz™ Mounting Medium: sc-24941.

## RT-PCR REAGENTS

Semi-quantitative RT-PCR may be performed to monitor PLC  $\delta$ 4 gene expression knockdown using RT-PCR Primer: PLC  $\delta$ 4 (m)-PR: sc-45854-PR (20  $\mu$ l). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

## RESEARCH USE

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