SANTA CRUZ BIOTECHNOLOGY, INC.

PLC ε siRNA (h): sc-44024

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 and diacylglycerol from phosphatidylinositol 4,5-bisphosphate. There are many mammalian PLC isozymes, including PLC β1, PLC β2, PLC β3, PLC β4, PLC γ1, PLC γ2, PLC δ1, PLC δ2 and PLC ε) Phospholipase C ε (PLC ε) is characterized by possession of CDC25 homology and Ras/Rap1-associating domains. PLC ε is translocated from the cytoplasm to the plasma membrane and activated by direct association with Ras at its Ras/Rap1-associating domain.

REFERENCES

1. Rhee, S.G. and Choi, K.D. 1992. Regulation of inositol phospholipid-specific phospholipase C isozymes. J. Biol. Chem. 267: 12393-12396.
2. Kelley, G.G., et al. 2001. Phospholipase C ε: a novel Ras effector. EMBO J. 20: 743-754.
3. Jin, T.G., et al. 2001. Role of the CDC25 homology domain of phospholipase C ε in amplification of Rap1-dependent signaling. J. Biol. Chem. 276: 30301-30307.
4. Wing, M.R., et al. 2001. Activation of phospholipase C ε by heterotrimeric G protein βγ-subunits. J. Biol. Chem. 276: 48257-48261.
5. Song, C., et al. 2002. Differential roles of Ras and Rap1 in growth factor-dependent activation of phospholipase C ε. Oncogene 21: 8105-8113.
6. Wu, D., et al. 2003. Neuronal lineage-specific induction of phospholipase C ε expression in the developing mouse brain. Eur. J. Neurosci. 17: 1571-1580.
7. Wing, M.R., et al. 2003. Direct activation of phospholipase C ε by Rho. J. Biol. Chem. 278: 41253-41258.
8. Wing, M.R., et al. 2003. PLC ε: a shared effector protein in Ras-, Rho-, and G $_{\alpha\beta\gamma}$-mediated signaling. Mol. Interv. 3: 273-280.
9. Seifert, J.P., et al. 2004. RhoA activates purified phospholipase C ε by a guanine nucleotide-dependent mechanism. J. Biol. Chem. 279: 47992-47997.

CHROMOSOMAL LOCATION

Genetic locus: PLCE1 (human) mapping to 10q23.33.

PRODUCT

PLC ε 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 PLC ε shRNA Plasmid (h): sc-44024-SH and PLC ε shRNA (h) Lentiviral Particles: sc-44024-V as alternate gene silencing products.

For independent verification of PLC ε (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-44024A, sc-44024B and sc-44024C.

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

PLC ε siRNA (h) is recommended for the inhibition of PLC ε 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 PLC ε gene expression knockdown using RT-PCR Primer: PLC ε (h)-PR: sc-44024-PR (20 µl, 427 bp). Annealing temperature for the primers should be 55-60° C and the extension temperature should be 68-72° C.

SELECT PRODUCT CITATIONS

1. Hashimoto, A., et al. 2015. Cilostazol induces PGI2 production via activation of the downstream Epac-1/Rap 1 signaling cascade to increase intracellular calcium by PLC ε and to activate p44/42 MAPK in human aortic endothelial cells. PLoS ONE 10: e0132835.
2. Zhu, X., et al. 2017. Phospholipase C ε deficiency delays the early stage of cutaneous wound healing and attenuates scar formation in mice. Biochem. Biophys. Res. Commun. 484: 144-151.
3. Li, Y. and Luan, C. 2018. PLCE1 promotes the invasion and migration of esophageal cancer cells by up-regulating the PKC α/NFκB pathway. Yonsei Med. J. 59: 1159-1165.
4. Zhang, J., et al. 2020. Phospholipase C ε mediates cytokine cascade induced by acute disruption of epidermal permeability barrier in mice. Biochem. Biophys. Rep. 24: 100869.

RESEARCH USE

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