PLCD3

1-Phosphatidylinositol-4,5-bisphosphate phosphodiesterase delta-3 is an enzyme that in humans is encoded by the PLCD3 gene.

Function

This gene encodes a member of the phospholipase C family, which catalyze the hydrolysis of phosphatidylinositol 4,5-bisphosphate to generate the second messengers diacylglycerol and inositol 1,4,5-trisphosphate (IP3). Diacylglycerol and IP3 mediate a variety of cellular responses to extracellular stimuli by inducing protein kinase C and increasing cytosolic Ca2+ concentrations. This enzyme localizes to the plasma membrane and requires calcium for activation. Its activity is inhibited by spermine, sphingosine, and several phospholipids.

Liu et al., demonstrated that flotillin2 (Flot2) plays a pro-neoplastic role in nasopharyngeal carcinoma (NPC) and is involved in tumour progression and metastasis. In a study, they screened the interacting proteins of Flot2 using the yeast two-hybrid (Y2H) method and verified the interaction between PLCD3 and Flot2 by co-immunoprecipitation. They also investigated the biological functions of PLCD3 in NPC. Inhibition of PLCD3 expression impaired the malignant potential of 5-8F, a highly metastatic NPC cell line, by restraining its growth, proliferation, mobility and migration. The study demonstrated that PLCD3 may be an oncogenic protein in NPC and that it plays an important role in the progression of NPC partially by interacting with Flot2 [1)].

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Liu W, Liu X, Wang L, Zhu B, Zhang C, Jia W, Zhu H, Liu X, Zhong M, Xie D, Liu Y, Li S, Shi J, Lin J, Xia X, Jiang X, Ren C. PLCD3, a flotillin2-interacting protein, is involved in proliferation, migration and invasion of nasopharyngeal carcinoma cells. Oncol Rep. 2018 Jan;39(1):45-52. doi: 10.3892/or.2017.6080. Epub 2017 Nov 6. PubMed PMID: 29115528; PubMed Central PMCID: PMC5783603.