

Phosphatidylcholine-specific phospholipase D (E.C. 3.1.4.4)

Overview: Phosphatidylcholine-specific phospholipase D (PLD, ENSF00000001451) catalyses the formation of phosphatidic acid from phosphatidylcholine. In addition, the enzyme can make use of alcohols, such as butanol in a transphosphatidylation reaction (Randall *et al.*, 1990).

Nomenclature	PLD1	PLD2
Other names	Choline phosphatase 1	Choline phosphatase 2
Ensembl ID	ENSG00000075651	ENSG00000129219
Endogenous activators	ARF, PIP ₂ , RhoA, PKC-evoked phosphorylation (Hammond <i>et al.</i> , 1997), RalA (Luo <i>et al.</i> , 1997)	ARF, PIP ₂ (Lopez <i>et al.</i> , 1998), oleic acid (Sarri <i>et al.</i> , 2003)
Endogenous inhibitors	Gβγ (Preininger <i>et al.</i> , 2006)	Gβγ (Preininger <i>et al.</i> , 2006)

A lysophospholipase D activity (ENSG00000136960, also known as ectonucleotide pyrophosphatase/phosphodiesterase 2 (ENPP2), phosphodiesterase I, nucleotide pyrophosphatase 2, autotaxin) has been described, which not only catalyses the production of lysophosphatidic acid from lysophosphatidylcholine, but also cleaves ATP (see Goding *et al.*, 2003). Additionally, an *N*-acylethanolamine-specific phospholipase D (NAPE-PLD, ENSG00000161048) has recently been characterized, which appears to have a role in the generation of endocannabinoids/endovanilloids, including anandamide (Okamoto *et al.*, 2004). This enzyme activity appears to be enhanced by polyamines in the physiological range (Liu *et al.*, 2002) and fails to transphosphatidylate with alcohols (Petersen and Hansen, 1999).

Abbreviations: ARF, ADP-ribosylation factor; NAPE-PLD, *N*-acylethanolamine-specific phospholipase D; PIP₂, phosphatidylinositol 4,5-bisphosphate

Further Reading

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