

PL(C)D4:3xCa²⁺ hydrolase PI(4,5)P₂ to I(1,4,5)P₃ and DAG at the ER membrane

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Introduction

Reactome is open-source, open access, manually curated and peer-reviewed pathway database. Pathway annotations are authored by expert biologists, in collaboration with Reactome editorial staff and cross-referenced to many bioinformatics databases. A system of evidence tracking ensures that all assertions are backed up by the primary literature. Reactome is used by clinicians, geneticists, genomics researchers, and molecular biologists to interpret the results of high-throughput experimental studies, by bioinformaticians seeking to develop novel algorithms for mining knowledge from genomic studies, and by systems biologists building predictive models of normal and disease variant pathways.

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Literature references

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Reactome database release: 78

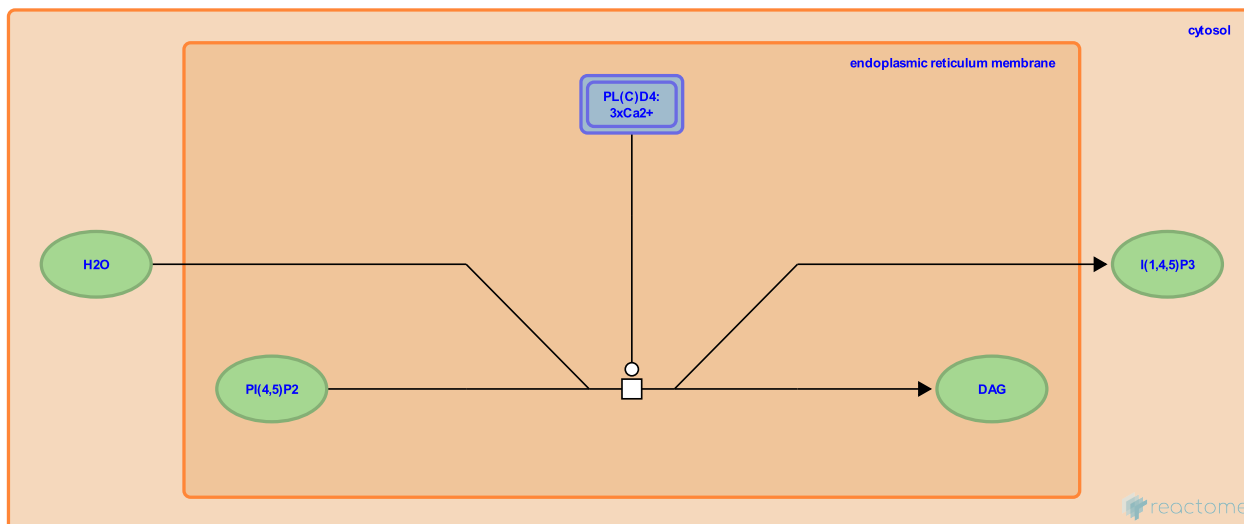
This document contains 1 reaction ([see Table of Contents](#))

PL(C)D4:3xCa²⁺ hydrolyse PI(4,5)P₂ to I(1,4,5)P₃ and DAG at the ER membrane ↗

Stable identifier: R-HSA-1855214

Type: transition

Compartments: endoplasmic reticulum membrane, cytosol



At the endoplasmic reticulum (ER) membrane, 1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase delta-4 (PLCD4) and phospholipase D4 (PLD4) hydrolyse phosphatidylinositol 4,5-bisphosphate (PI(4,5)P₂) to inositol 1,4,5-trisphosphate (I(1,4,5)P₃) and diacylglycerol (DAG). Both lipases are thought to require three Ca²⁺ ions per subunit for activity. PLD4 is attached to the ER membrane via its PH domain while its C2 domain binds to the PI(4,5)P₂ in the membrane (Lee et al. 2004). Overexpression or dysregulated expression of PLCD4 may initiate oncogenesis in certain tissues through upregulation of ErbB expression and activation of ERK pathway. PLCD4 can therefore be a useful tumor marker for breast or testicular cancer tissues (Leung et al. 2004).

Literature references

Ball, A., Morris, V., Coon, M., Singer, JW., Brewer, J., Waggoner, D. 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. ↗

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Editions

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