

SPHK1 phosphorylates sphingoid

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29/04/2024

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.

The development of Reactome is supported by grants from the US National Institutes of Health (P41 HG003751), University of Toronto (CFREF Medicine by Design), European Union (EU STRP, EMI-CD), and the European Molecular Biology Laboratory (EBI Industry program).

Literature references

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Reactome database release: 88

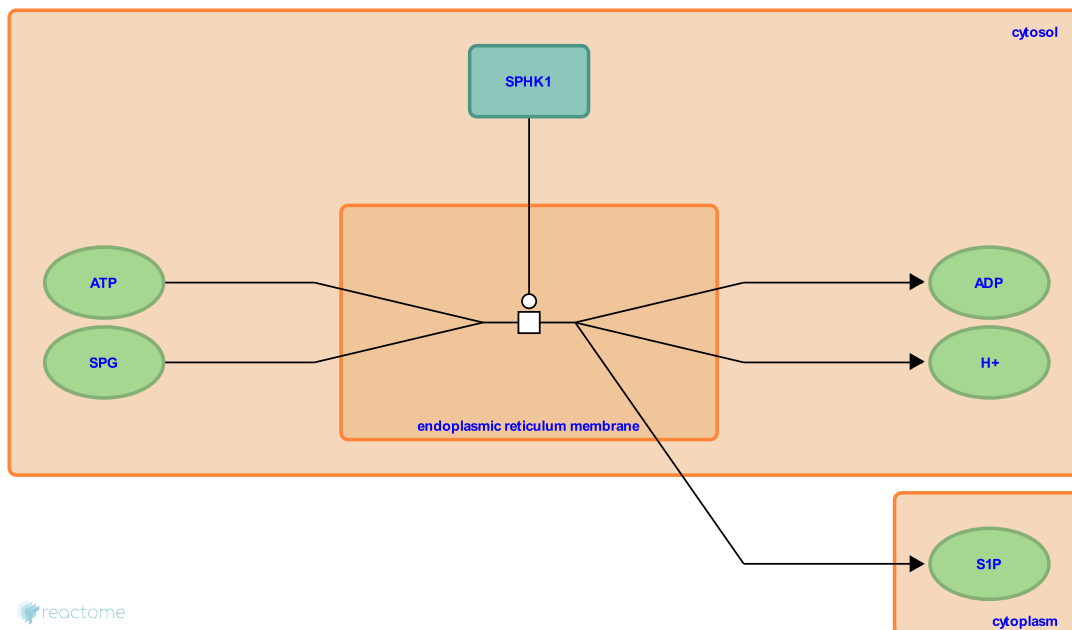
This document contains 1 reaction ([see Table of Contents](#))

SPHK1 phosphorylates sphingoid ↗

Stable identifier: R-HSA-428273

Type: transition

Compartments: cytosol, endoplasmic reticulum membrane



The cytosolic enzyme sphingosine kinase 1 (SPHK1) catalyzes the phosphorylation of sphingoids (SPG) to sphingoid 1-phosphate (S1P). The main product is sphingosine 1-phosphate, a bioactive lipid that acts extracellularly on G protein-coupled receptors of the S1P1/EDG-1 subfamily (Nava et al., 2000; Pitson et al., 2000; Wang et al., 2013; reviewed by Siow & Wattenberg, 2011). The isoforms SK1a, SK1b, and SK1c are produced through alternative splicing and show functional differences in their activity (reviewed by Hatoum et al., 2017). SPHK1 is regulated transcriptionally by transcription factors, cytokines, and micro-RNAs (reviewed by Bonica et al., 2020). Its activity is also modulated by posttranslational modifications and interactions with other proteins (reviewed by Pulkoski-Gross & Obeid, 2018). Through its product S1P, which is a multifunctional signaling lipid, SPHK1 is essential in inflammation processes (reviewed by Rauch, 2014). SPHK1 was also shown to be associated with cancer genesis, progression, and metastatic processes (Zhang et al., 2014).

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Editions

2009-08-21	Authored, Edited	D'Eustachio, P.
2009-08-21	Reviewed	Jassal, B.
2009-11-19	Reviewed	Hannun, YA., Luberto, C.
2023-10-24	Reviewed	D'Eustachio, P.