

# CSNK1G2 phosphorylates p-CERT1-2

D'Eustachio, P., Hannun, YA., Jassal, B., Luberto, C.

European Bioinformatics Institute, New York University Langone Medical Center, Ontario Institute for Cancer Research, Oregon Health and Science University.

The contents of this document may be freely copied and distributed in any media, provided the authors, plus the institutions, are credited, as stated under the terms of [Creative Commons Attribution 4.0 International \(CC BY 4.0\) License](#). For more information see our [license](#).

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

- Fabregat, A., Sidiropoulos, K., Viteri, G., Forner, O., Marin-Garcia, P., Arnau, V. et al. (2017). Reactome pathway analysis: a high-performance in-memory approach. *BMC bioinformatics*, 18, 142. [↗](#)
- Sidiropoulos, K., Viteri, G., Sevilla, C., Jupe, S., Webber, M., Orlic-Milacic, M. et al. (2017). Reactome enhanced pathway visualization. *Bioinformatics*, 33, 3461-3467. [↗](#)
- Fabregat, A., Jupe, S., Matthews, L., Sidiropoulos, K., Gillespie, M., Garapati, P. et al. (2018). The Reactome Pathway Knowledgebase. *Nucleic Acids Res*, 46, D649-D655. [↗](#)
- Fabregat, A., Korninger, F., Viteri, G., Sidiropoulos, K., Marin-Garcia, P., Ping, P. et al. (2018). Reactome graph database: Efficient access to complex pathway data. *PLoS computational biology*, 14, e1005968. [↗](#)

Reactome database release: 88

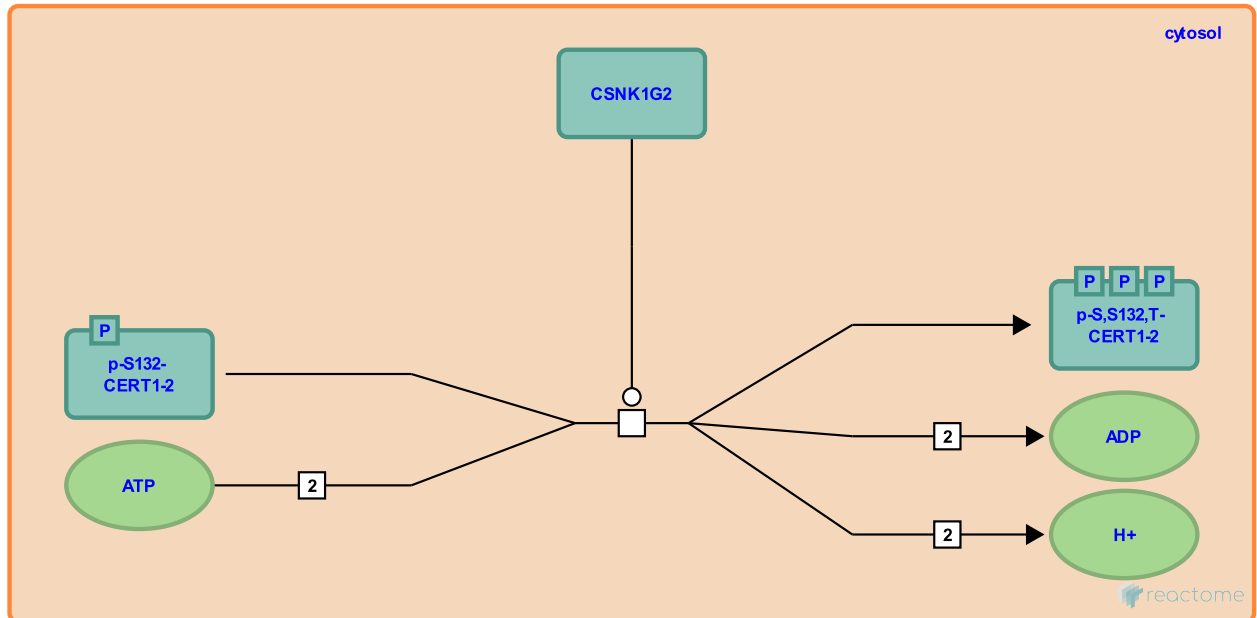
This document contains 1 reaction ([see Table of Contents](#))

## CSNK1G2 phosphorylates p-CERT1-2 [↗](#)

**Stable identifier:** R-HSA-429714

**Type:** transition

**Compartments:** cytosol



Cytosolic CSNK1G2 (casein kinase 1, gamma 2) catalyzes the phosphorylation of multiple serine and threonine residues of “CERT” (ceramide transfer protein) already phosphorylated on serine-132 (Tomishige et al. 2009). This reaction has the effect of inhibiting ceramide transport from the endoplasmic reticulum to the Golgi apparatus as multiphospho-CERT is unable to bind ceramides or associate with the Golgi membrane (reviewed by Kumagai & Hanada, 2019).

### Literature references

Hanada, K., Kusuda, J., Kumagai, K., Tomishige, N., Nishijima, M. (2009). Casein kinase I $\gamma$ 2 down-regulates trafficking of ceramide in the synthesis of sphingomyelin. *Mol Biol Cell*, 20, 348-57. [↗](#)

Hanada, K., Kumagai, K. (2019). Structure, functions and regulation of CERT, a lipid-transfer protein for the delivery of ceramide at the ER-Golgi membrane contact sites. *FEBS Lett*, 593, 2366-2377. [↗](#)

### 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.
2023-10-26	Revised	D'Eustachio, P.
2024-03-04	Reviewed	D'Eustachio, P.