

# Smurf1/2 ubiquitinates Ptch1

Gillespie, ME., Liu, Y C., Rothfels, K.

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

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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: 88

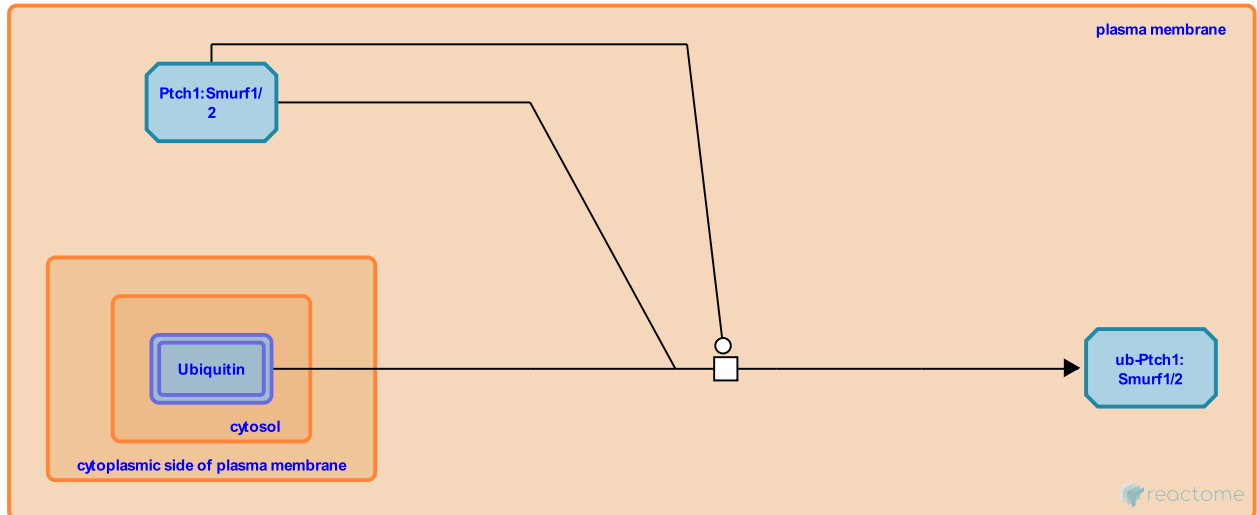
This document contains 1 reaction ([see Table of Contents](#))

## Smurf1/2 ubiquitinates Ptch1 [↗](#)

**Stable identifier:** R-MMU-5632644

**Type:** transition

**Compartments:** plasma membrane



Mouse Ptch1 is ubiquitinated on its C-terminal tail in a Smurf1/2-dependent manner. Smurf1/2-mediated ubiquitination is stimulated by SHH and results in downregulation of Ptch1 from the ciliary membrane to endocytic compartments for degradation (Yue et al, 2014).

### Literature references

Zhang, YE., Shen, QH., Tang, LY., Chen, Y., Yue, S., Zhang, Z. et al. (2014). Requirement of Smurf-mediated endocytosis of Patched1 in Sonic Hedgehog signal reception. *Elife*, e02555. [↗](#)

### Editions

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