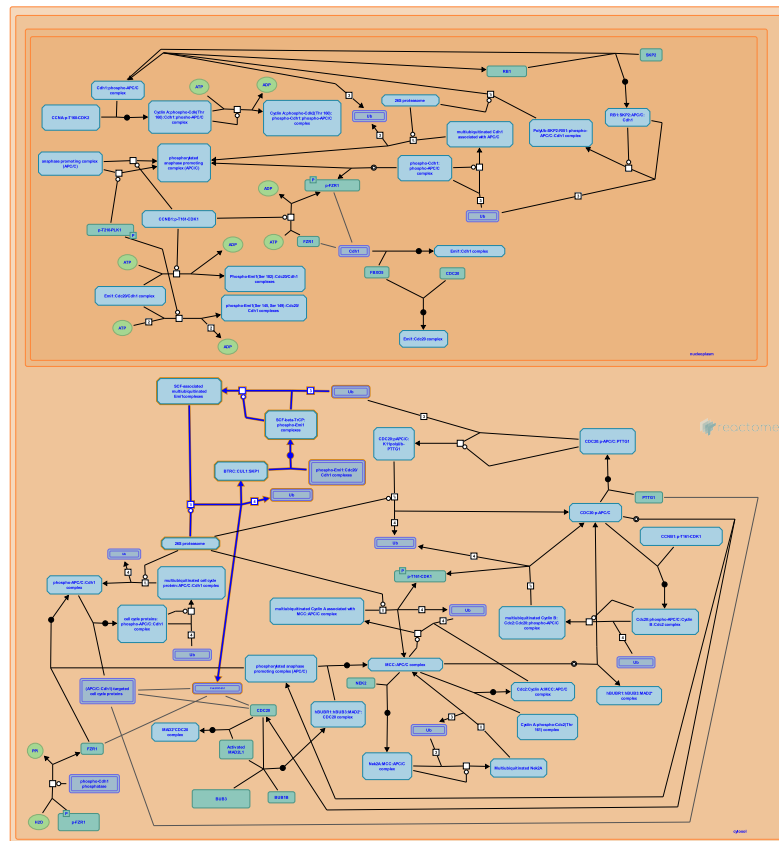


# SCF-beta-TrCP mediated degradation of Emi1



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This is just an excerpt of a full-length report for this pathway. To access the complete report, please download it at the [Reactome Textbook](https://reactome.org/textbook/).

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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.

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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- Sidiropoulos, K., Viteri, G., Sevilla, C., Jupe, S., Webber, M., Orlic-Milacic, M. et al. (2017). Reactome enhanced pathway visualization. *Bioinformatics*, 33, 3461-3467. [↗](#)
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- 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. [↗](#)

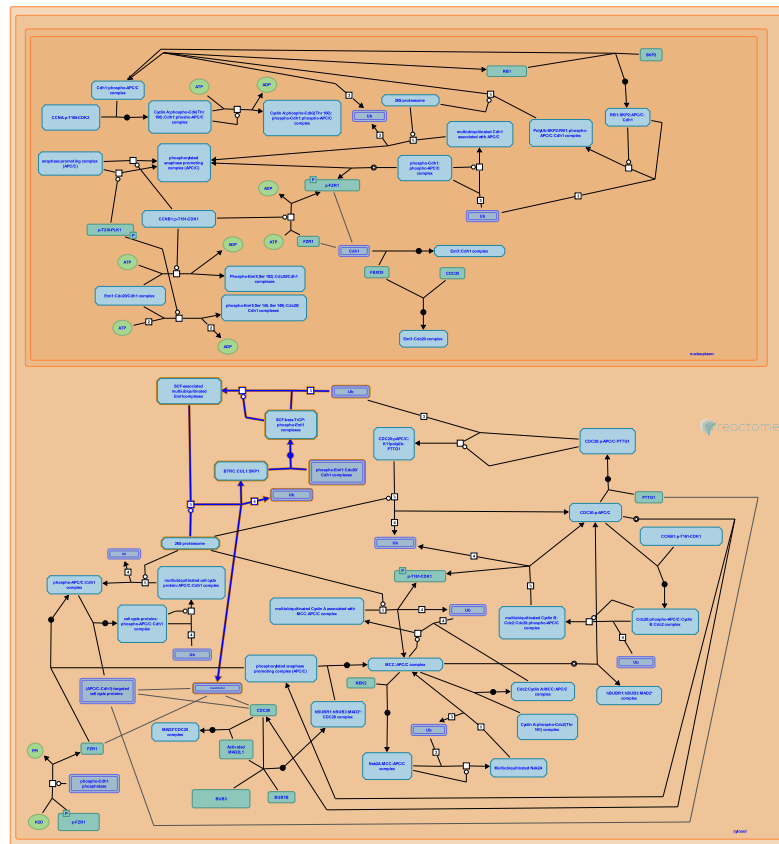
Reactome database release: 88

This document contains 1 pathway and 3 reactions ([see Table of Contents](#))

# SCF-beta-TrCP mediated degradation of Emi1 [↗](#)

**Stable identifier:** R-HSA-174113

**Compartments:** cytosol



Emi1 destruction in early mitosis requires the SCF beta-TrCP ubiquitin ligase complex. Binding of beta-TrCP to Emi1 occurs in late prophase and requires phosphorylation at the DSGxxS consensus motif as well as Cdk mediated phosphorylation. A two-step mechanism has been proposed in which the phosphorylation of Emi1 by Cdc2 occurs after the G2-M transition followed soon after by binding of beta-TrCP to the DSGxxS phosphorylation sites. Emi1 is then poly-ubiquitinated and degraded by the 26S proteasome.

## Literature references

Reimann, JD., Loktev, A., Hsu, JY., Jackson, PK., Margottin-Goguet, F., Hsieh, HM. (2003). Prophase destruction of Emi1 by the SCF(betaTrCP/Slimb) ubiquitin ligase activates the anaphase promoting complex to allow progression beyond prometaphase. *Dev Cell*, 4, 813-26. [↗](#)

## Editions

2006-01-26	Authored	Lorca, T., Castro, A.
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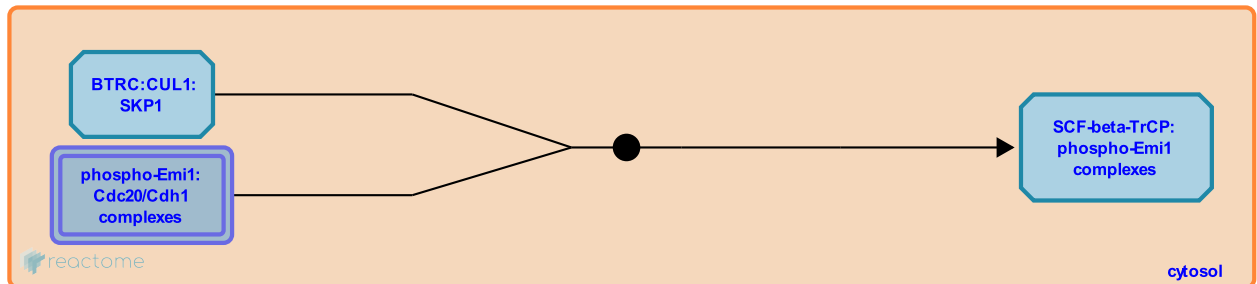
## Phosphorylated Emi1 binds the beta-TrCP in the SCF complex ↗

**Location:** SCF-beta-TrCP mediated degradation of Emi1

**Stable identifier:** R-HSA-174209

**Type:** binding

**Compartments:** cytosol



Cdk mediated phosphorylation of Emi1 is believed to promote its phospho- Ser145-Ser149 dependent association with beta-TrCP.

**Followed by:** Ubiquitination of Emi1 by SCF-beta-TrCP

### Literature references

Reimann, JD., Loktev, A., Hsu, JY., Jackson, PK., Margottin-Goguett, F., Hsieh, HM. (2003). Prophase destruction of Emi1 by the SCF(betaTrCP/Slimb) ubiquitin ligase activates the anaphase promoting complex to allow progression beyond prometaphase. *Dev Cell*, 4, 813-26. ↗

Chiaur, DS., Latres, E., Pagano, M. (1999). The human F box protein beta-Trcp associates with the Cul1/Skp1 complex and regulates the stability of beta-catenin. *Oncogene*, 18, 849-54. ↗

### Editions

2006-01-26	Authored	Lorca, T., Castro, A.
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2006-03-28	Reviewed	Peters, JM.

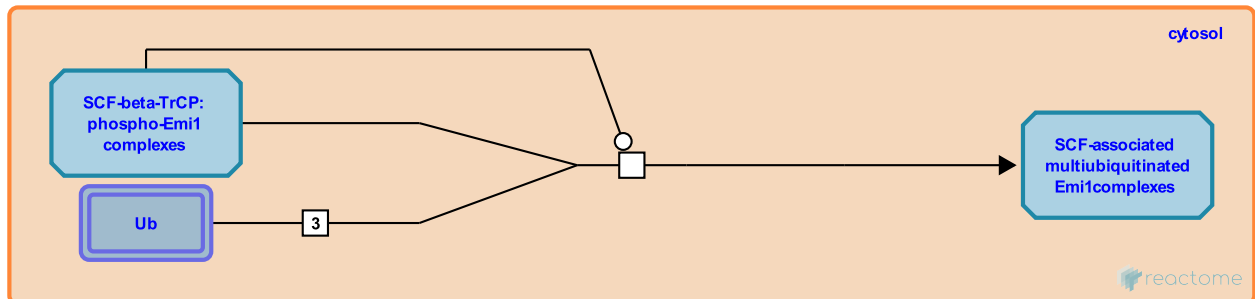
## Ubiquitination of Emi1 by SCF-beta-TrCP [↗](#)

**Location:** [SCF-beta-TrCP mediated degradation of Emi1](#)

**Stable identifier:** R-HSA-174159

**Type:** transition

**Compartments:** cytosol



Following its association with SCF- $\beta$ TrCP, phospho-Emi1 is poly-ubiquitinated.

**Preceded by:** [Phosphorylated Emi1 binds the beta-TrCP in the SCF complex](#)

**Followed by:** [SCF-mediated degradation of Emi1](#)

### Literature references

Hansen, DV., Loktev, AV., Ban, KH. (2004). Plk1 regulates activation of the anaphase promoting complex by phosphorylating and triggering SCFbetaTrCP-dependent destruction of the APC Inhibitor Emi1. *Mol Biol Cell*, 15, 5623-34. [↗](#)

### Editions

2006-01-26	Authored	Lorca, T., Castro, A.
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2006-03-28	Reviewed	Peters, JM.

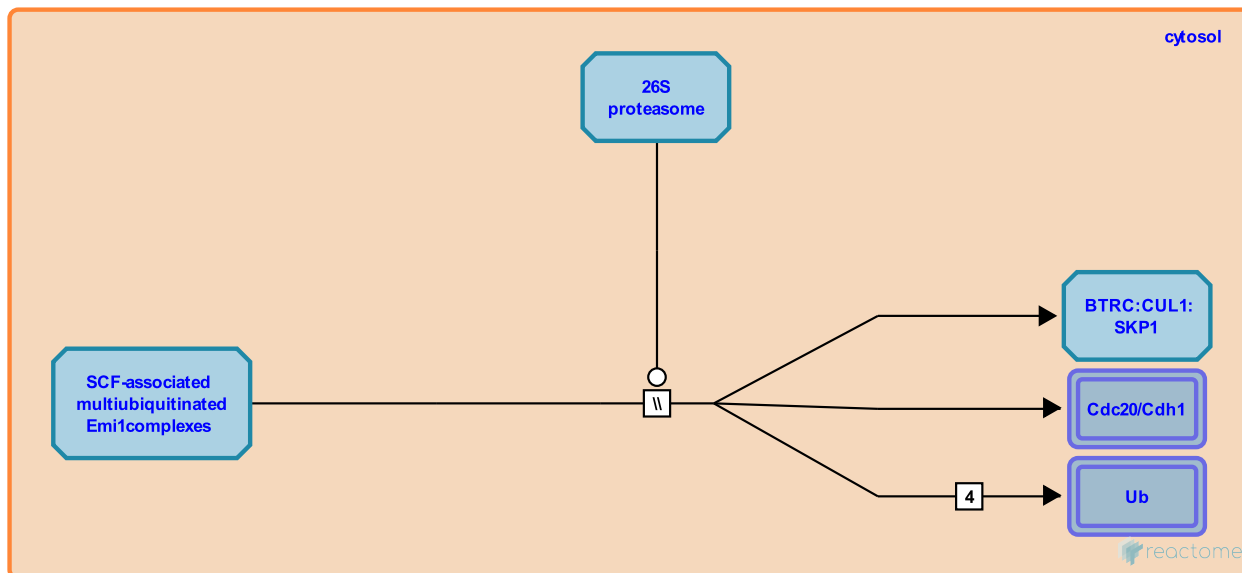
## SCF-mediated degradation of Emi1 ↗

**Location:** SCF-beta-TrCP mediated degradation of Emi1

**Stable identifier:** R-HSA-174203

**Type:** omitted

**Compartments:** cytosol



Multiubiquitinated Emi1 is degraded by the 26S proteasome.

**Preceded by:** Ubiquitination of Emi1 by SCF-beta-TrCP

## Literature references

Hansen, DV., Loktev, AV., Ban, KH. (2004). Plk1 regulates activation of the anaphase promoting complex by phosphorylating and triggering SCFbetaTrCP-dependent destruction of the APC Inhibitor Emi1. *Mol Biol Cell*, 15, 5623-34. ↗

## Editions

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# Table of Contents

Introduction	1
☒ SCF-beta-TrCP mediated degradation of Emi1	2
↳ Phosphorylated Emi1 binds the beta-TrCP in the SCF complex	3
↳ Ubiquitination of Emi1 by SCF-beta-TrCP	4
☒ SCF-mediated degradation of Emi1	5
Table of Contents	6