ESPL1 (Separase) cleaves centromeric cohesin

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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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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. ↗

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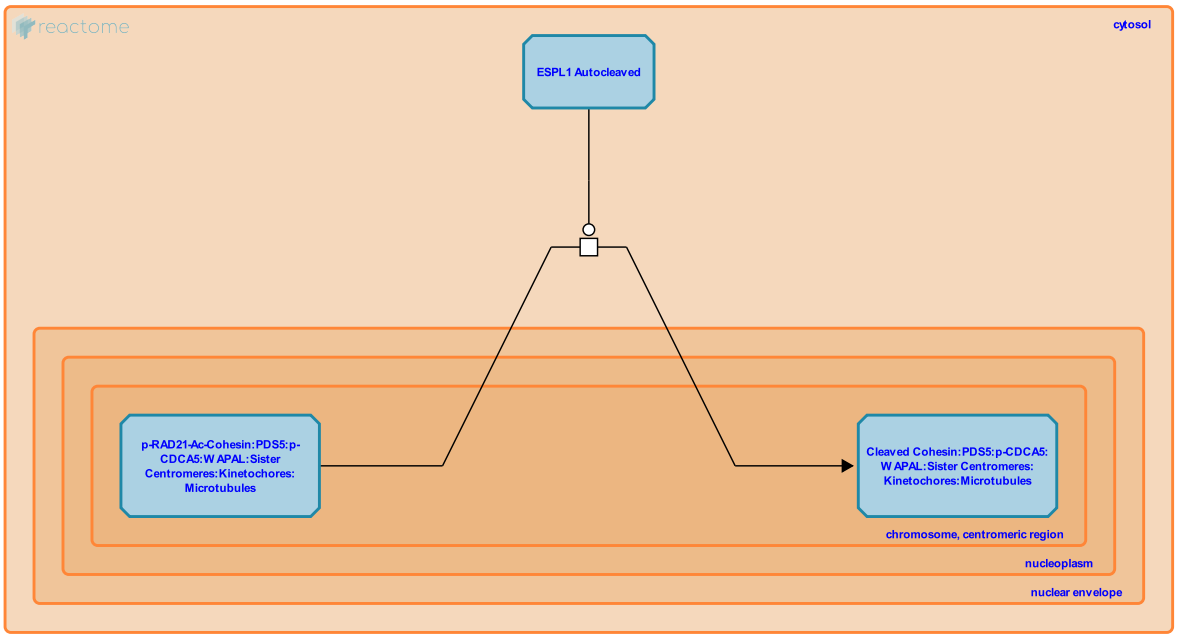
Stable identifier: R-HSA-2467809

Type: transition

Compartments: chromosome, centromeric region, cytosol



ESPL1 (separin i.e. separase) cleaves RAD21 (SCC1) subunit of centromeric cohesin at two sites that conform to the consensus separase recognition site E-X-X-R: after arginine residue R172 and after arginine residue R450 (Hauf et al. 2001). Phosphorylation of RAD21 at the serine residue S454 by PLK1 in prometaphase facilitates ESPL1-mediated cleavage of RAD21 at the C-terminal cleavage site R450 (Hauf et al. 2005). The N-terminal and C-terminal RAD21 cleavage fragments remain bound to the rest of the cohesin complex (Deardorff et al. 2012). It is not clear whether RAD21 middle fragment also continues to be associated with cohesin.

Literature references

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Editions

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