NEDD8:AcM-UBE2M binds CRL1 E3 ubiquitin ligase complex

Pick, E., Rothfels, K.
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


Reactome database release: 83

This document contains 1 reaction (see Table of Contents)
NEDD8:AcM-UBE2M binds CRL1 E3 ubiquitin ligase complex

Stable identifier: R-HSA-8952620

Type: binding

Compartments: cytosol

UBE2M is the E2 for CRL complexes containing cullin 1, 2, 3 and 4 (Huang et al, 2009; Monda et al, 2013). Interaction between UBE2M and the CUL1 E3 complex is facilitated by a DCUN1D (also known as DCNL) scaffold protein, of which there are 5 in human cells (Kim et al, 2008; Kurz et al, 2008; Meyer-Schaller et al, 2009; Monda et al, 2013; Keuss et al, 2016). DCUN1D proteins interact with higher affinity to the N-terminally acetylated forms of UBE2F and UBE2M (Scott et al, 2011; Monda et al, 2013). Although each of the 5 DCUN1D proteins appears to interact with most cullin subtypes, specificity may arise through differences in expression and localization, and DCUN1D3 may play a specialized role in sequestering CRL E3 ligase complexes at the cell membrane (Monda et al, 2013; Keuss et al, 2016; Meyer-Schaller et al, 2009; Huang et al, 2014; reviewed in Enchev et al, 2103). Although in this pathway, COMMD proteins and DCUN1D are shown acting sequentially in the activation of the CRL E3 ligase complex, the relationship between these protein families is not totally clear, as DCUN1D proteins have been identified in complexes that also contain the inhibitor CAND1 (Kim et al, 2008; Huang et al, 2014).

Target specificity of the CRL1 complex is directed by the nature of the F box substrate recognition protein, of which there are more than 60 in humans. Identified targets of CRL1-containing complexes include signaling molecules, transcriptional regulators and regulators of cell cycle progression, among others (reviewed in Gutierrez and Ronai, 2006; Lipkowitz and Weissman, 2011). CRL1 complexes are also hijacked by a number of viruses, redirecting the ubiquitin ligase complex to target host proteins and in this way promoting viral propagation (reviewed in Mahon et al, 2014).

Literature references


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