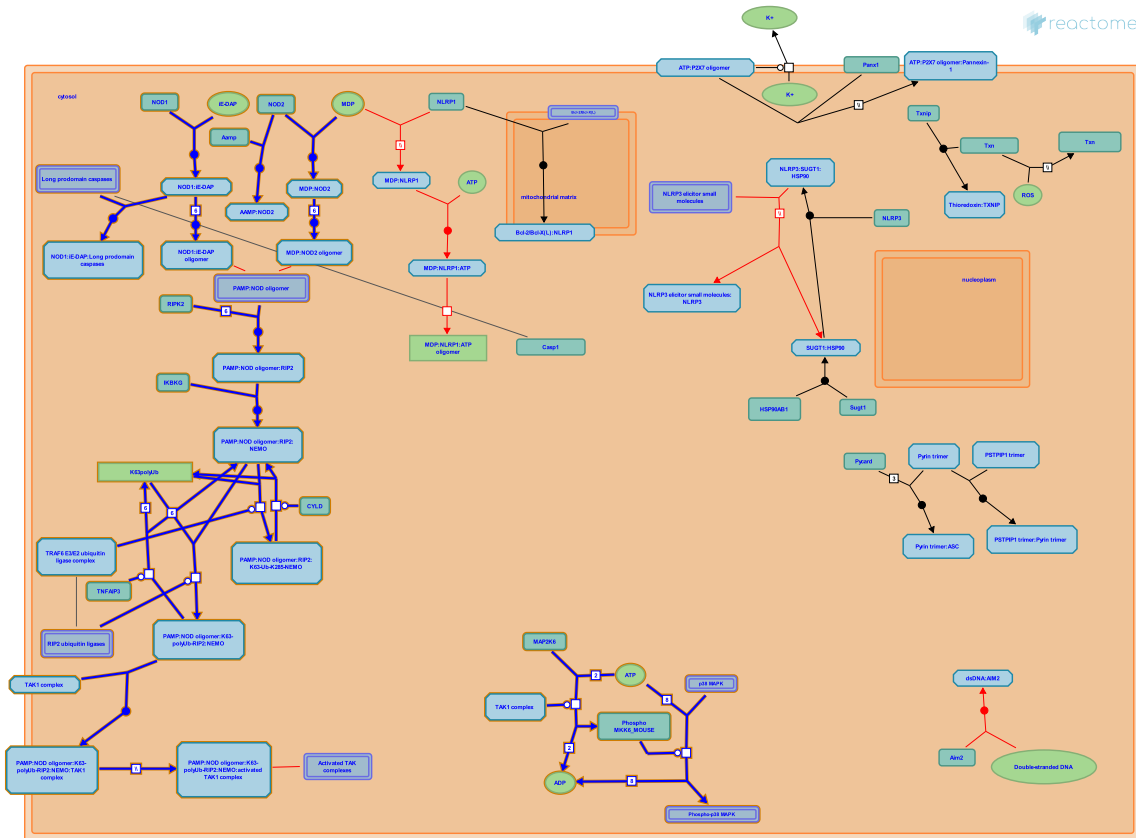


# NOD1/2 Signaling Pathway



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

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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).

## 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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- 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. [↗](#)

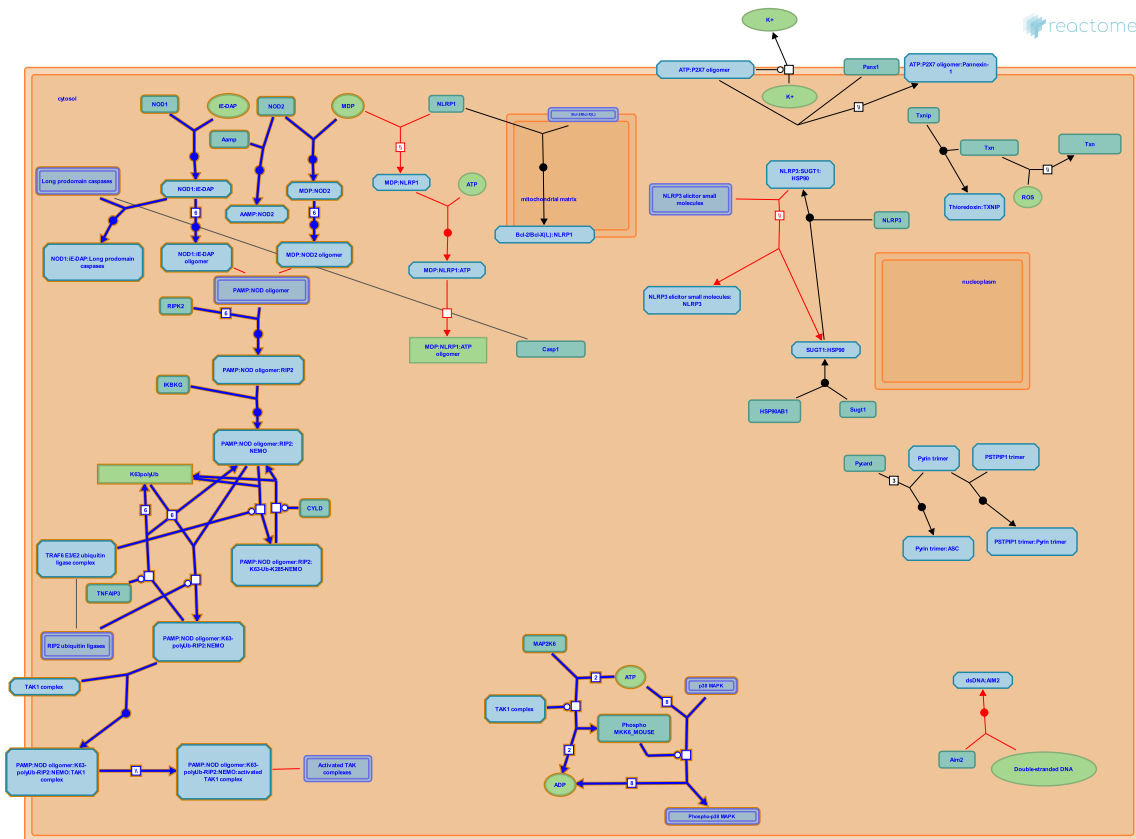
Reactome database release: 88

This document contains 1 pathway and 16 reactions ([see Table of Contents](#))

# NOD1/2 Signaling Pathway ↗

Stable identifier: R-MMU-168638

Inferred from: NOD1/2 Signaling Pathway (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](http://www.pantherdb.org/about.jsp) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

## iE-DAP elicits a NOD1 response ↗

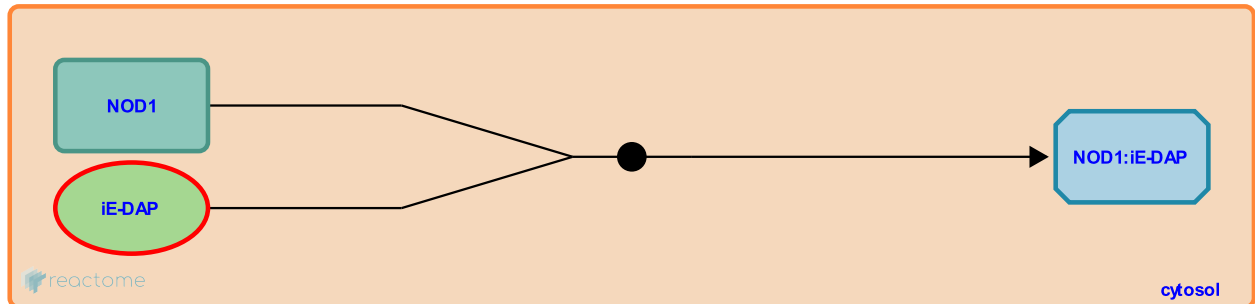
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-168400

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [iE-DAP elicits a NOD1 response \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Followed by:** [Activated NOD1 oligomerizes](#)

## MDP elicits a NOD2 response ↗

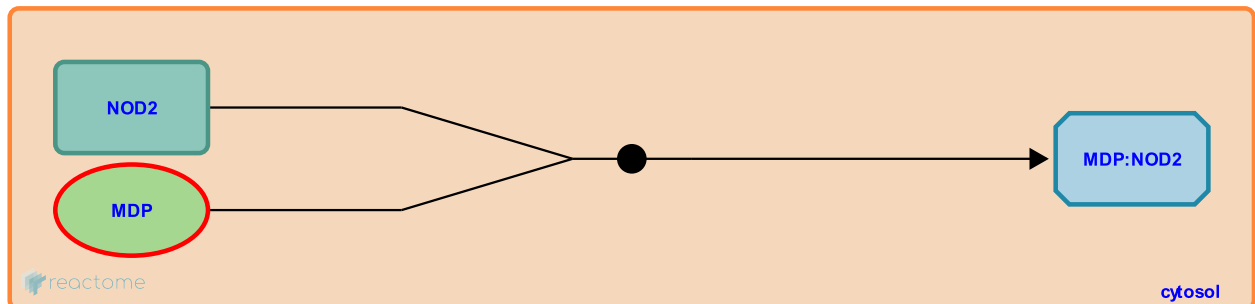
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-168412

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [MDP elicits a NOD2 response \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Followed by:** [Activated NOD2 oligomerizes](#)

## Activated NOD1 oligomerizes ↗

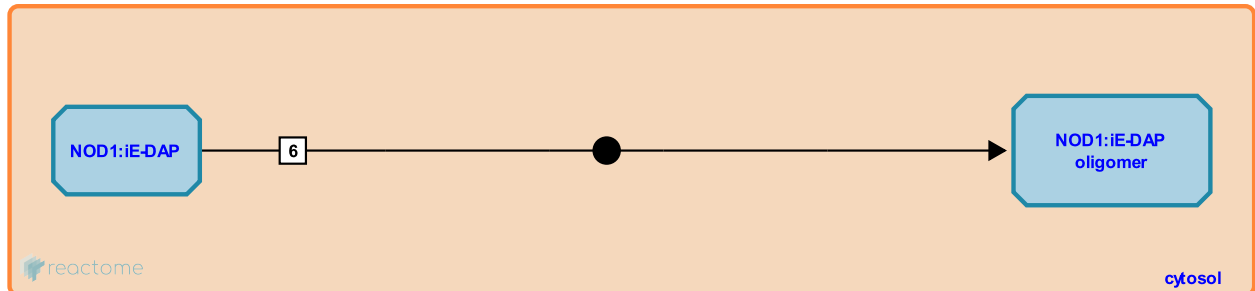
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-622310

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [Activated NOD1 oligomerizes \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [iE-DAP elicits a NOD1 response](#)

**Followed by:** [NOD1 induced apoptosis is mediated by RIP2 and CARD8](#), [Activated NOD oligomer recruits RIP2 \(RICK\)](#)

## Activated NOD2 oligomerizes ↗

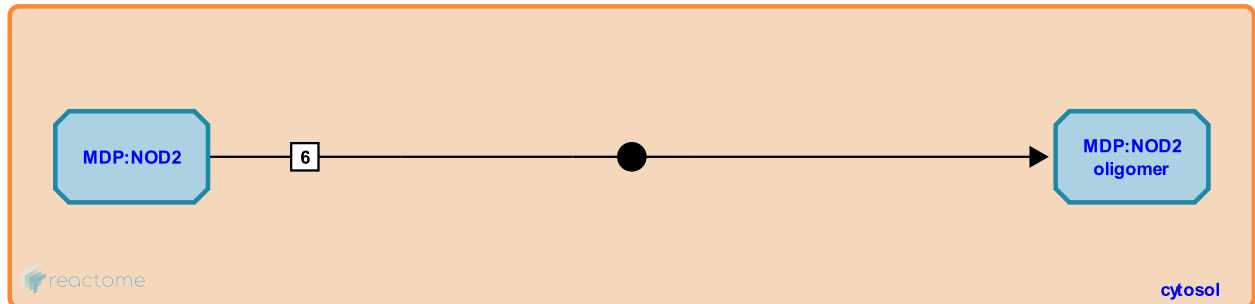
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-708349

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [Activated NOD2 oligomerizes \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [MDP elicits a NOD2 response](#)

**Followed by:** [Activated NOD oligomer recruits RIP2 \(RICK\)](#)

## Activated NOD oligomer recruits RIP2 (RICK) ↗

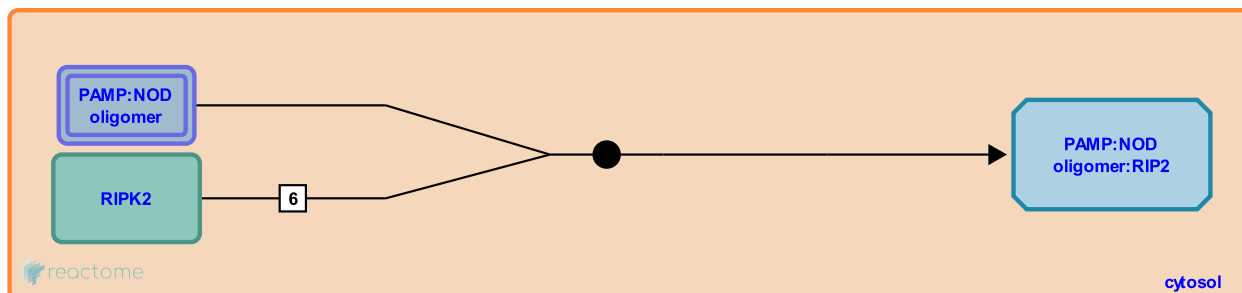
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-168405

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [Activated NOD oligomer recruits RIP2 \(RICK\) \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [Activated NOD2 oligomerizes](#), [Activated NOD1 oligomerizes](#)

**Followed by:** [RIP2 binds NEMO](#), [RIP2 is K63 polyubiquitinated](#)



## RIP2 binds NEMO ↗

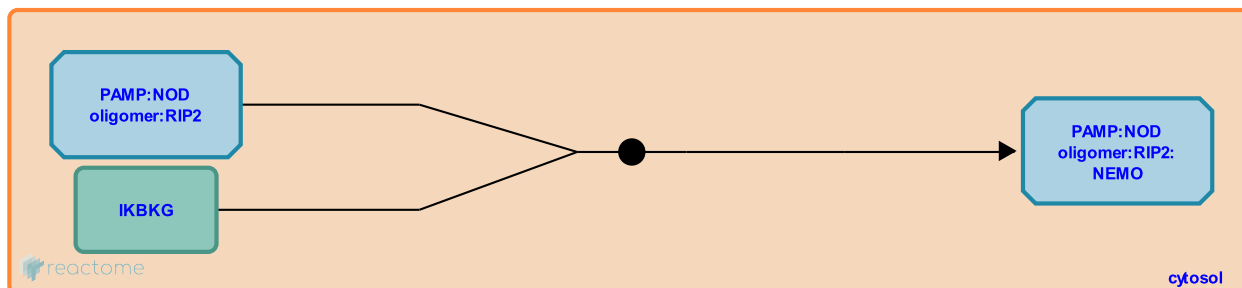
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-622415

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [RIP2 binds NEMO \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [Activated NOD oligomer recruits RIP2 \(RICK\)](#)

**Followed by:** [RIP2 induces K63-linked ubiquitination of NEMO](#)

## RIP2 induces K63-linked ubiquitination of NEMO ↗

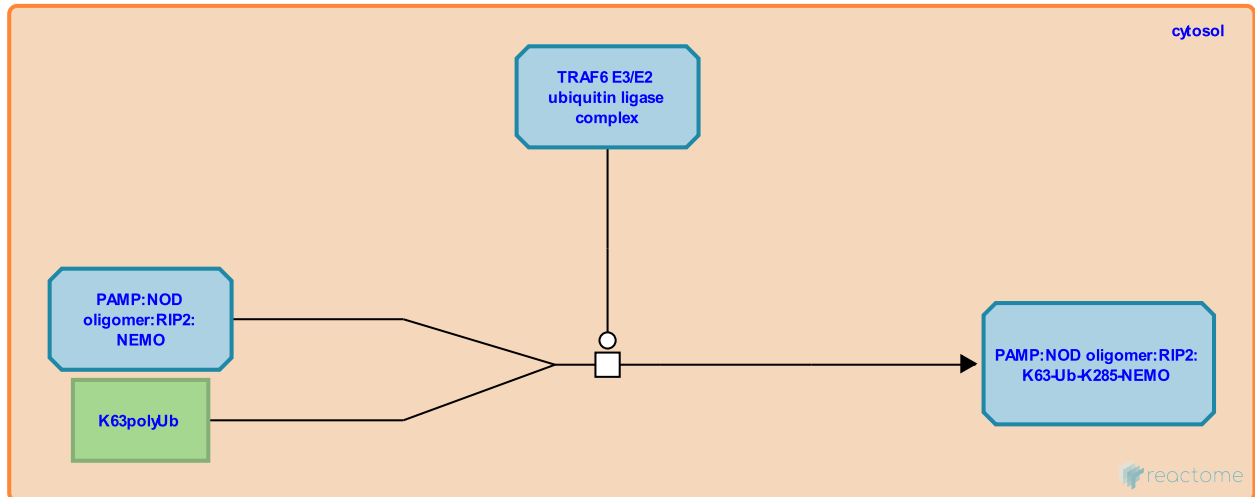
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-741386

**Type:** transition

**Compartments:** cytosol

**Inferred from:** [RIP2 induces K63-linked ubiquitination of NEMO \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [RIP2 binds NEMO](#)

**Followed by:** [CYLD deubiquitinates NEMO](#)

## CYLD deubiquitinates NEMO ↗

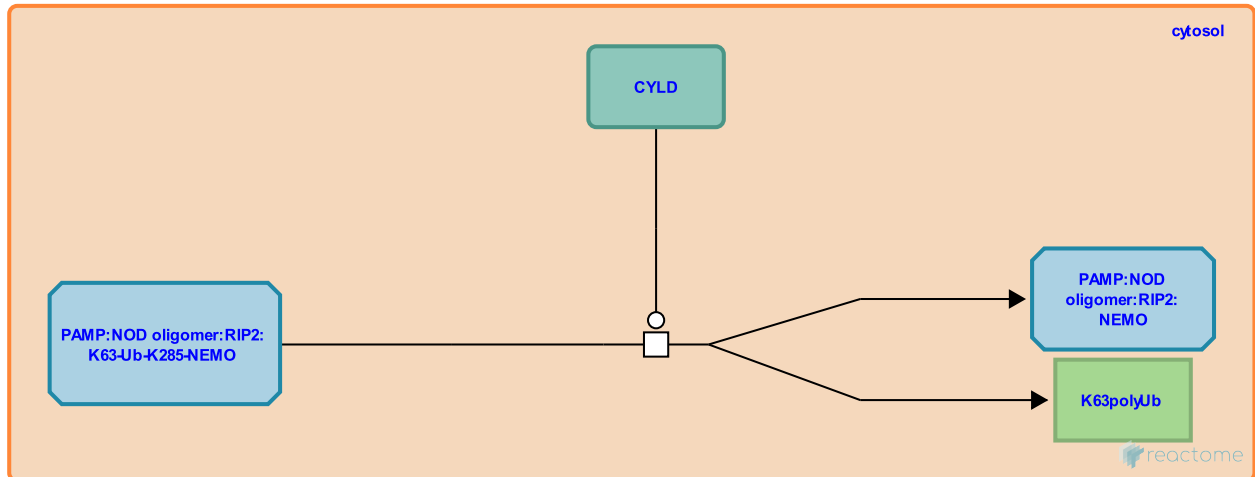
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-741411

**Type:** transition

**Compartments:** cytosol

**Inferred from:** [CYLD deubiquitinates NEMO \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [RIP2 induces K63-linked ubiquitination of NEMO](#)

## RIP2 is K63 polyubiquitinated ↗

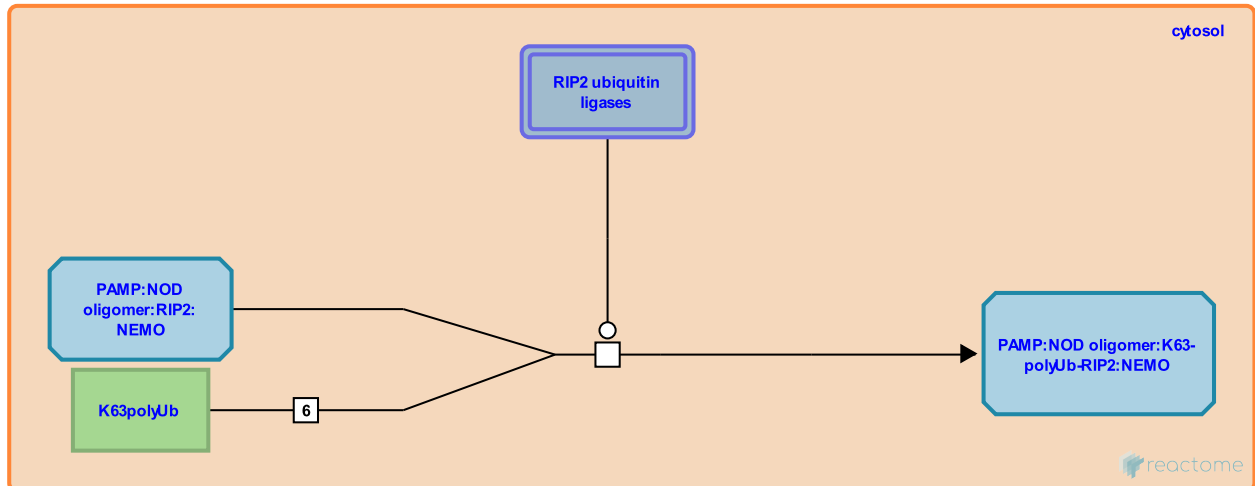
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-688137

**Type:** transition

**Compartments:** cytosol

**Inferred from:** [RIP2 is K63 polyubiquitinated \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [Activated NOD oligomer recruits RIP2 \(RICK\)](#)

**Followed by:** [TNFAIP3 \(A20\) deubiquitinates RIP2](#), [K63 polyubiquitinated RIP2 associates with the TAK1 complex](#)

## TNFAIP3 (A20) deubiquitinates RIP2 [↗](#)

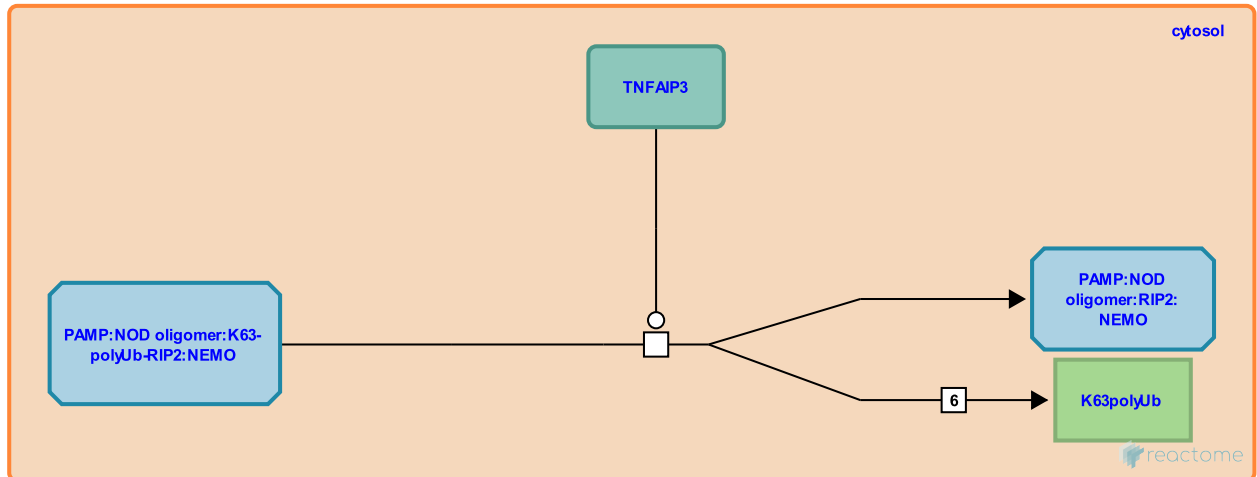
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-688136

**Type:** transition

**Compartments:** cytosol

**Inferred from:** [TNFAIP3 \(A20\) deubiquitinates RIP2 \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [RIP2 is K63 polyubiquitinated](#)

## K63 polyubiquitinated RIP2 associates with the TAK1 complex ↗

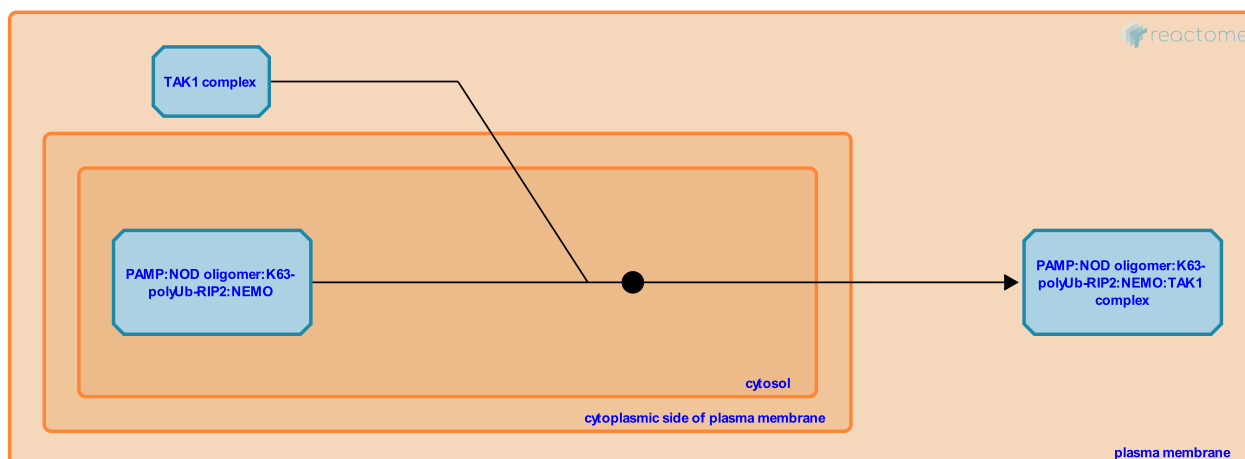
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-688985

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [K63 polyubiquitinated RIP2 associates with the TAK1 complex \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [RIP2 is K63 polyubiquitinated](#)

**Followed by:** [TAK1 is activated](#)

## TAK1 is activated ↗

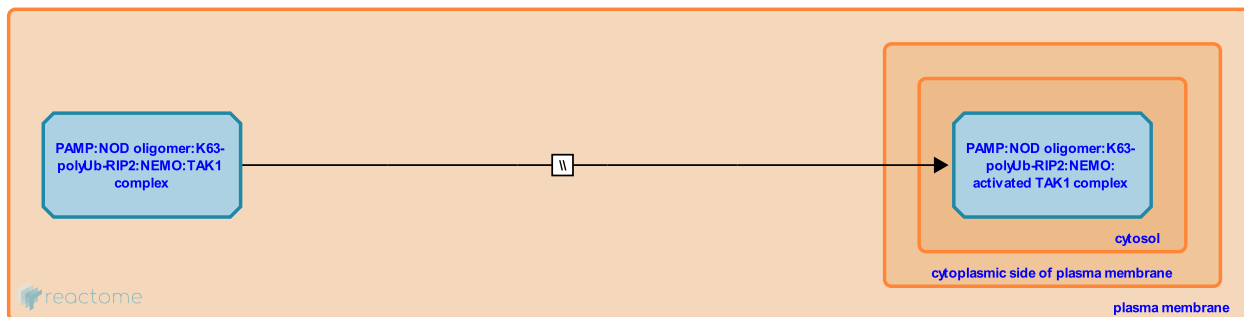
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-706479

**Type:** omitted

**Compartments:** plasma membrane, cytosol

**Inferred from:** [TAK1 is activated \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [K63 polyubiquitinated RIP2 associates with the TAK1 complex](#)

**Followed by:** [TAK1 phosphorylates MKK6](#)

## TAK1 phosphorylates MKK6 ↗

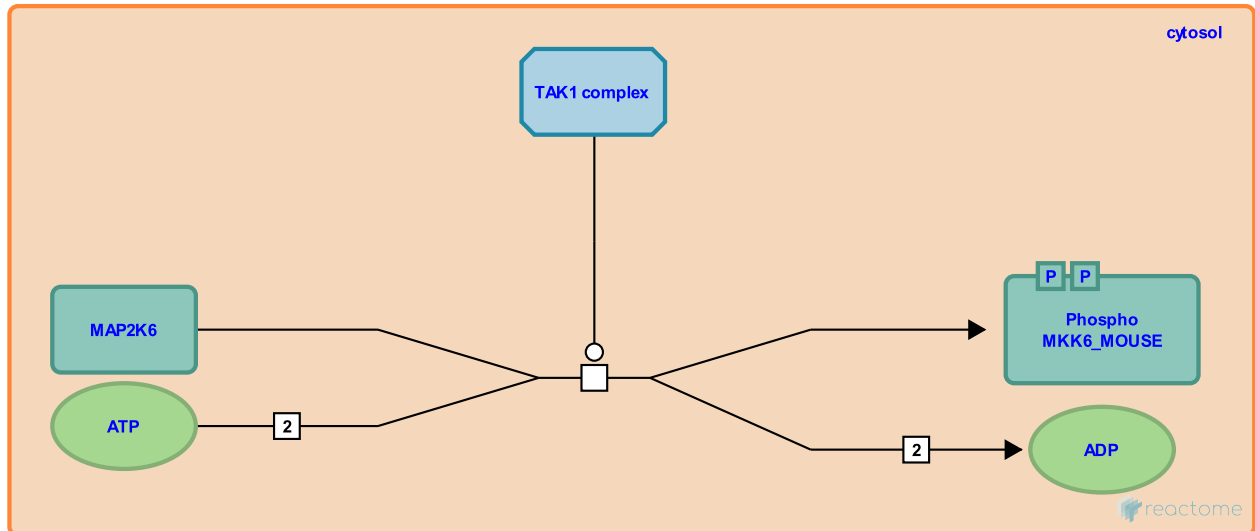
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-727819

**Type:** transition

**Compartments:** cytosol

**Inferred from:** [TAK1 phosphorylates MKK6 \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [TAK1 is activated](#)

**Followed by:** [Activation of p38 MAPK](#)



## NOD1 induced apoptosis is mediated by RIP2 and CARD8 ↗

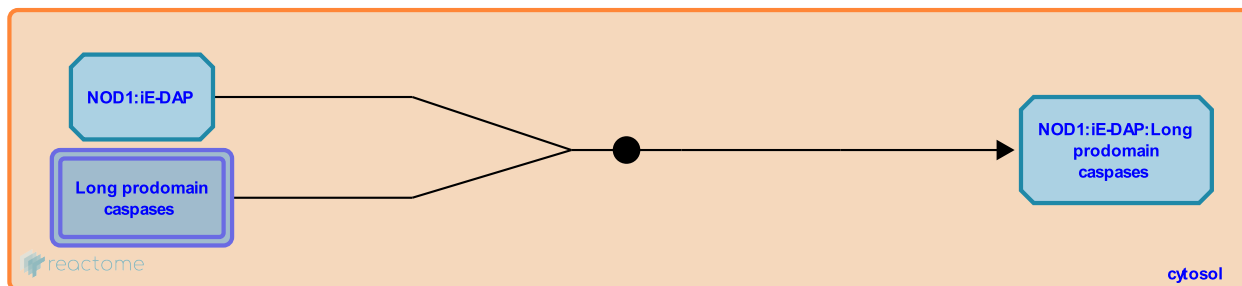
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-622420

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [NOD1 induced apoptosis is mediated by RIP2 and CARD8 \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

**Preceded by:** [Activated NOD1 oligomerizes](#)

## Activation of p38 MAPK ↗

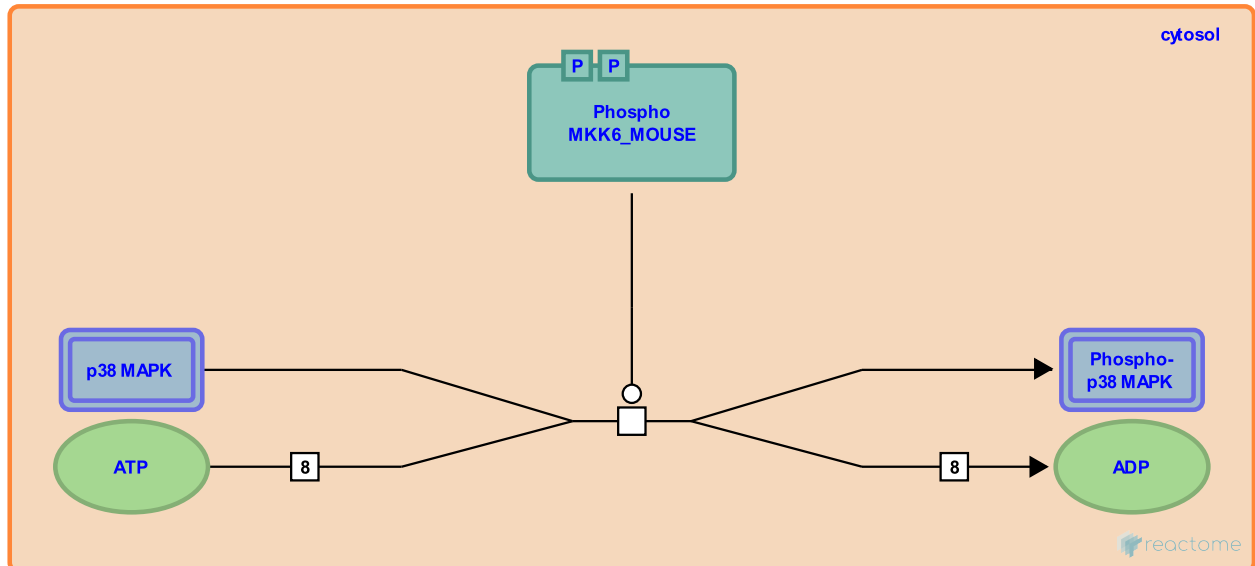
**Location:** NOD1/2 Signaling Pathway

**Stable identifier:** R-MMU-1247960

**Type:** transition

**Compartments:** cytosol

**Inferred from:** Activation of p38 MAPK (Homo sapiens)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

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**Preceded by:** TAK1 phosphorylates MKK6

## AAMP binds NOD2 ↗

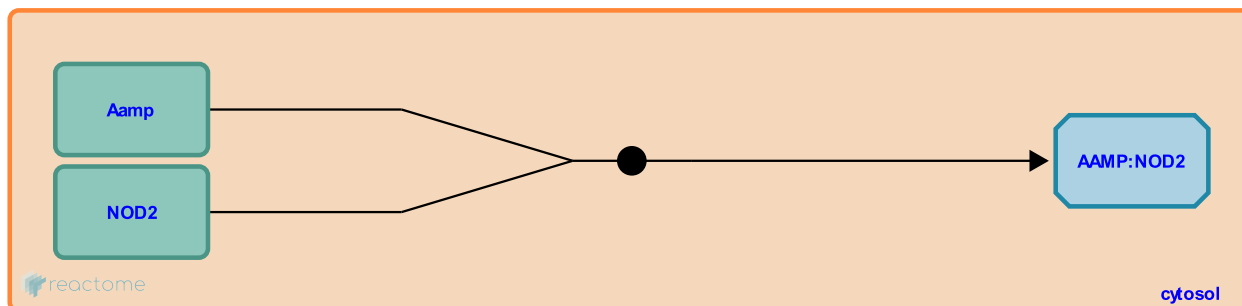
**Location:** [NOD1/2 Signaling Pathway](#)

**Stable identifier:** R-MMU-9676160

**Type:** binding

**Compartments:** cytosol

**Inferred from:** [AAMP binds NOD2 \(Homo sapiens\)](#)



This event has been computationally inferred from an event that has been demonstrated in another species.

The inference is based on the homology mapping from PANTHER. Briefly, reactions for which all involved PhysicalEntities (in input, output and catalyst) have a mapped orthologue/paralogue (for complexes at least 75% of components must have a mapping) are inferred to the other species. High level events are also inferred for these events to allow for easier navigation.

[More details and caveats of the event inference in Reactome.](#) For details on PANTHER see also: <http://www.pantherdb.org/about.jsp>

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