

iE-DAP elicits a NOD1 response

Jupe, S., Kufer, TA., Rittinger, K., Wong, E.

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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- 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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Reactome database release: 88

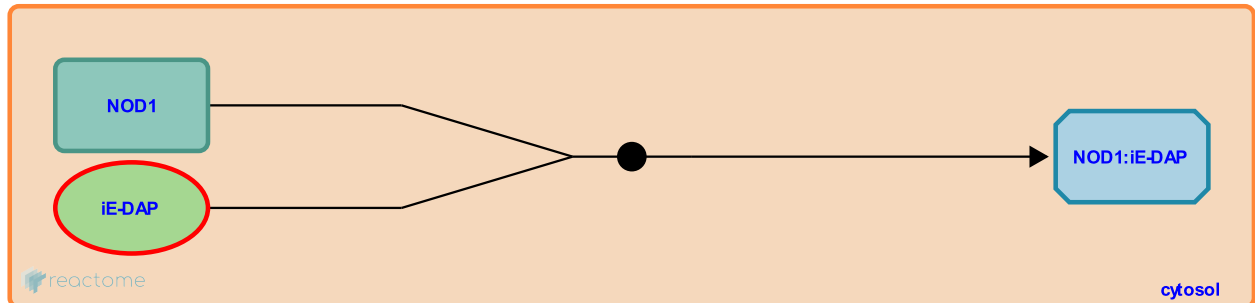
This document contains 1 reaction ([see Table of Contents](#))

iE-DAP elicits a NOD1 response [↗](#)

Stable identifier: R-HSA-168400

Type: binding

Compartments: cytosol



Early studies suggested that NOD1 and NOD2 responded to lipopolysaccharides (LPS), but this was later shown to be due to contamination of LPS with bacterial peptidoglycans (PGNs), the true elicitor for NODs. It is generally believed that PGNs bind NOD1 though this remains to be formally demonstrated. NOD1 senses PGN moieties with a minimal dipeptide structure of D-gamma-glutamyl-meso-diaminopimelic acid (iE-DAP), which is unique to PGN structures from all Gram-negative bacteria and certain Gram-positive bacteria, including the genus *Listeria* and *Bacillus*. Attachment of acyl residues enhances NOD1 stimulation several hundred fold, possibly by facilitating PGN entry into the cell (Hasegawa et al. 2007).

Literature references

Qiu, S., Kawasaki, A., Mak, TW., Nunez, G., Inohara, N., Valvano, MA. et al. (2003). An essential role for NOD1 in host recognition of bacterial peptidoglycan containing diaminopimelic acid. *Nat Immunol*, 4, 702-7. [↗](#)

Jéhanno, M., Girardin, SE., Viala, J., Philpott, DJ., Bertin, J., Tedin, K. et al. (2003). Nod1 detects a unique muropeptide from gram-negative bacterial peptidoglycan. *Science*, 300, 1584-7. [↗](#)

Editions

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