Anthrax lef cleaves target cell MAP2K1 (MEK1)

D'Eustachio, P., Leppla, SH., Liu, S., Moayeri, M., Turk, BE.

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

21/05/2024

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

Fabregat, A., Sidiropoulos, K., Viteri, G., Forner, O., Marin-Garcia, P., Arnau, V. et al. (2017). Reactome pathway analysis: a high-performance in-memory approach. *BMC bioinformatics, 18*, 142. ↗

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. ↗

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. ↗

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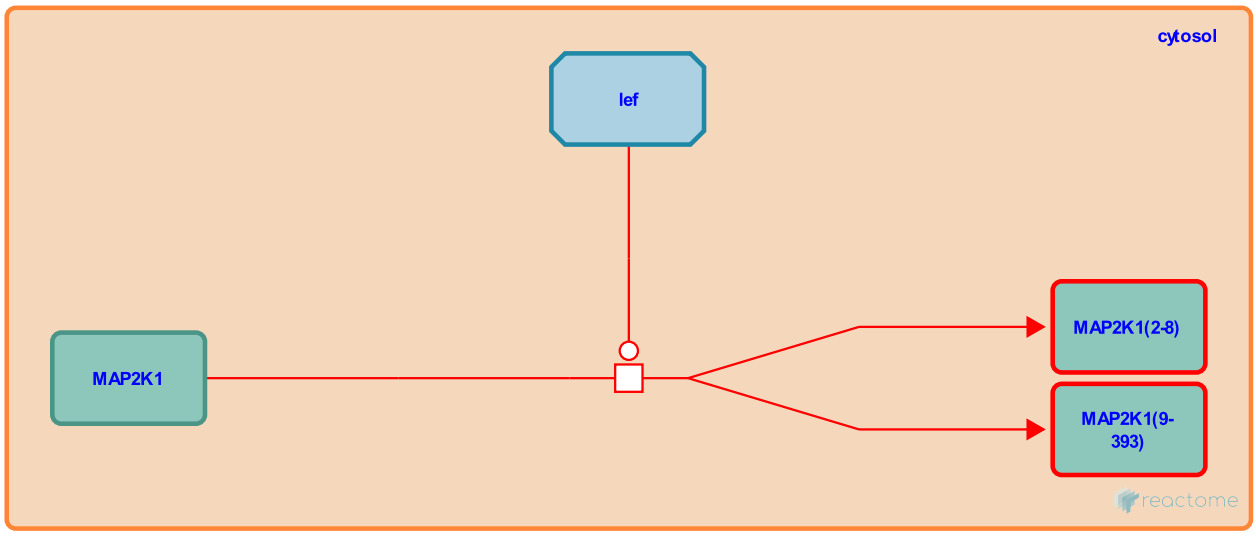
Stable identifier: R-HSA-5211340

Type: transition

Compartments: cytosol

Diseases: anthrax disease



lef (Anthrax LF, lethal factor), a zinc metalloprotease (Klimpel et al, 1994) in the target cell cytosol, cleaves MAP2K1 (MEK1, mitogen activated protein kinase kinase 1) at the N-terminus. While the kinase domain of MAP2K1 is unaffected, an aminoterminal docking domain is disrupted by the cleavage and the protein fails to interact normally with substrates (Duesbery et al. 1998; Vitale et al. 1998).

Literature references

Klimpel, KR., Leppla, SH., Webb, CP., Paull, KD., Ahn, NG., Gordon, VM. et al. (1998). Proteolytic inactivation of MAP-kinase-kinase by anthrax lethal factor. *Science, 280*, 734-7.

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Klimpel, KR., Leppla, SH., Arora, N. (1994). Anthrax toxin lethal factor contains a zinc metalloprotease consensus sequence which is required for lethal toxin activity. *Mol. Microbiol., 13*, 1093-100.

Editions

2013-12-13	Authored	D'Eustachio, P.
2014-05-19	Reviewed	Leppla, SH.
2014-05-23	Reviewed	Turk, BE.
2014-05-28	Reviewed	Moayeri, M., Liu, S.