Activated TAK1 mediates phosphorylation of the IKK Complex

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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**


Reactome database release: 78

This document contains 1 reaction (see Table of Contents)
Activated TAK1 mediates phosphorylation of the IKK Complex

Stable identifier: R-HSA-168184

Type: transition

Compartments: cytosol

In humans, the IKKs - IkB kinase (IKK) complex serves as the master regulator for the activation of NF-kB by various stimuli. The IKK complex contains two catalytic subunits, IKK alpha and IKK beta associated with a regulatory subunit, NEMO (IKKgamma). The activation of the IKK complex and the NFkB mediated antiviral response are dependent on the phosphorylation of IKK alpha/beta at its activation loop and the ubiquitination of NEMO [Solt et al 2009; Li et al 2002]. NEMO ubiquitination by TRAF6 is required for optimal activation of IKKalpha/beta; it is unclear if NEMO subunit undergoes K63-linked or linear ubiquitination.

This basic trimolecular complex is referred to as the IKK complex. Each catalytic IKK subunit has an N-terminal kinase domain and leucine zipper (LZ) motifs, a helix-loop-helix (HLH) and a C-terminal NEMO binding domain (NBD). IKK catalytic subunits are dimerized through their LZ motifs.

IKK beta is the major IKK catalytic subunit for NF-kB activation. Phosphorylation in the activation loop of IKK beta requires Ser177 and Ser181 and thus activates the IKK kinase activity, leading to the IkB alpha phosphorylation and NF-kB activation.

Literature references


### Editions

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