# IKK beta (human; full length), pAb

**Alternate Names:** Inhibitor of nuclear factor kappa-B kinase subunit beta, I-kappa-B-kinase beta, IKK-B, IkBKB, I-kappa-B kinase 2, IKK2

| | | | |
|---|---|---|---|
| **Cat. No.** | **68-0049-100** | Quantity: | 100 µg |
| **Lot. No.** | **30288** | Storage: | -20˚C |

FOR RESEARCH USE ONLY

NOT FOR USE IN HUMANS

**CERTIFICATE OF ANALYSIS**



**This antibody was developed and validated by the Medical Research Council Protein Phosphorylation and Ubiquitylation Unit (University of Dundee, Dundee, UK).**

## Background

Protein ubiquitylation and protein phosphorylation are the two major mechanisms that regulate the functions of proteins in eukaryotic cells. However, these different posttranslational modifications do not operate independently of one another, but are frequently interlinked to enable biological processes to be controlled in a more complex and sophisticated manner. Studying how protein phosphorylation events control the ubiquitin system and how ubiquitylation regulates protein phosphorylation has become a focal point of the study of cell regulation and human disease. IKK is a serine protein kinase and the IKK complex contains α and β subunits termed IKKα and IKKβ. The catalytic activities of both IKKα and IKKβ make essential contributions to IκB phosphorylation and NF-κB activation (Zandi *et al.*, 1997). Cloning of human IKKβ was described in 1997 by a number of groups (Mercurio *et al.*, 1997; Woronicz *et al.*, 1997; Zandi *et al.*, 1997). IKKβ shares 50% identity with IKKα and like it contains a kinase domain, a leucine zipper, and a helix-loop helix (Zandi *et al.*, 1997). IKKβ can phosphorylate and modulate the functions of several cytosolic proteins, including β-catenin, SRC-3, FOXO3a, CYLD and DOK1 (Lee *et al.*, 2007). IKKβ is phosphorylated for activation by several factors, such as pro-inflammatory cytokines and

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## Physical Characteristics

**Quantity:** 100 µg

**Concentration:** to be provided on shipping

**Source:** sheep polyclonal antibody

**Immunogen:** human IKK beta (residues 1-736) [6His-tagged]

**Purification:** affinity-purified using immobilized immunogen

**Formulation:** phosphate-buffered saline

**Specificity:** detects IKK beta at ~87 kDa

**Reactivity:** human

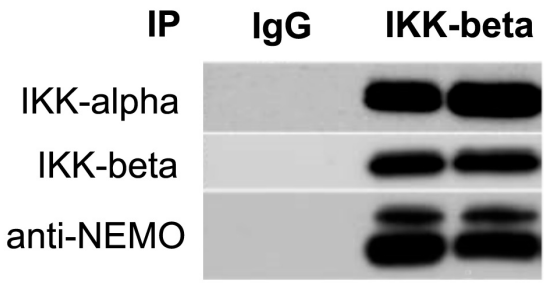
**Species cross reactivity:** mouse

**Stability/Storage:** 12 months at -20˚C; aliquot as required

## Research Applications and Quality Assurance

**Western Immunoblotting:**
not tested

**Immunoprecipitation:**
use 10 µg/mg of cell extract




**Immunoprecipitation Assay:**
Immunoprecipitation was performed from RAW264.7 macrophage total cell extract (1 mg) using 10 µg of anti-IKK beta antibody (Cat# 68-0049-100 or pre-immune serum (IgG). IKK beta (as well as IKK alpha and NEMO) were subsequently detected by Western Blot using commercially available antibodies.

N.B: As IKK beta is a component of the canonical IKK complex, other components of the complex (the catalytic subunits IKK alpha and NEMO) are also immunoprecipitated with the anti-IKK beta antibody.

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Email **services@ubiquigent.com** for enquiries regarding compound profiling and/or custom assay development services.



**Lot-specific COA version tracker:** v1.0.0

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## Background

*Continued from page 1*

the Tax oncoprotein of HTLV-1. In cells infected by HTLV-1, IKKβ is persistently phosphorylated and conjugated with monoubiquitin due to Tax expression. Although this Tax-induced monoubiquitylation appears to be an important regulation system for IKKβ, how the monoubiquitylation occurs is unknown and its role in NF-κB signalling is still unclear (Wada *et al.*, 2009). TNFα mediates tumour angiogenesis through dysregulated mTOR signalling caused by suppression of TSC1 by IKKβ, revealing a novel mechanism of inflammation-mediated tumour angiogenesis. Further investigations of the IKKβ/TSC1/mTOR signalling pathway may identify new molecules involved in regulating TNFα-induced pathological disorders. Preventing the phosphorylation of TSC1 may have important clinical implications for the treatment or prevention of cancer (Lee *et al.*, 2007).

### Antibody Production:

Anti-IKK beta (human) polyclonal antibody was raised in sheep against IKK beta (residues 1-736 of human IKK beta). The antibodies were purified by the Medical Research Council Protein Phosphorylation and Ubiquitylation Unit (MRC-PPU, University of Dundee, Dundee, U.K.) by affinity purification of the anti-IKK beta pAbs from the sheep serum using a 6His-tagged antigen-agarose column. Anti-IKK beta (human) pAb was sourced by Ubiquigent directly from the MRC-PPU.

**General References:**


Lee DF, Kuo HP, Chen CT, Hsu JM, Chou CK, Wei Y, *et al.* (2007) IKK beta suppression of TSC1 links inflammation and tumor angiogenesis via the mTOR pathway. *Cell* **130**, 440-455.

Mercurio F, Zhu H, Murray BW, Shevchenko A, Bennett BL, Li J, *et al.* (1997) IKK-1 and IKK-2: cytokine-activated IkappaB kinases essential for NF-kappaB activation. *Science* **278**, 860-866.

Wada K, Niida M, Tanaka M and Kamitani T (2009) Ro52-mediated monoubiquitination of IKK{beta} down-regulates NF-{kappa}B signalling. *J Biochem* **146**, 821-832.

Woronicz JD, Gao X, Cao Z, Rothe M and Goeddel DV (1997) IkappaB kinase-beta: NF-kappaB activation and complex formation with IkappaB kinase-alpha and NIK. *Science* **278**, 866-869.

Zandi E, Rothwarf DM, Delhase M, Hayakawa M and Karin M (1997) The IkappaB kinase complex (IKK) contains two kinase subunits, IKKalpha and IKKbeta, necessary for IkappaB phosphorylation and NF-kappaB activation. *Cell* **91**, 243-252.


**Application Reference:**


Zhang J, Clark K, Lawrence T, Peggie MW and Cohen P (2014) An unexpected twist to the activation of IKKbeta: TAK1 primes IKKbeta for activation by autophosphorylation. *Biochem J* **461**, 531-537.



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