CELL APPLICATIONS, INC.

MAP4K4/NIK/HGK Antibody

Cat. No. CP10161

Applications:	**WB**
Detected MW:	**150 kDa**
Species & Reactivity:	**Human**
Isotype:	**Mouse IgG1**

BACKGROUND

Mitogen-activated protein 4 kinase 4 (MAP4K4; also called hepatocyte progenitor kinase-like/germinal center kinase-like kinase) is a serine/threonine kinase and belongs to the mammalian STE20/MAP4K family. It mediates the phosphorylation of ERK-1/2 and JNK through activation of mitogen-activated protein kinase kinase kinase (MEKK1). Recent studies have shown that MAP4K4 is overexpressed in many types of human cancer cell lines and tumors compared with normal tissue. Dominant-negative mutant of MAP4K4 suppresses the Ras-induced transformation in NIH3T3 cells and rat intestinal epithelial cells. In addition, expression of inactive mutant MAP4K4 inhibits the anchorage-independent cell growth and hepatocyte growth factor-stimulated epithelial cell invasion. Furthermore, knockdown of MAP4K4 mRNA by small interfering RNA inhibits the tumor cell migration and invasion of ovarian cancer, breast cancer, prostate cancer, and malignant melanoma. These studies show that MAP4K4 plays an important role in transformation, cell migration, and invasiveness of cancer cells.[1]

In addition, MAP4K4 plays important role in metabolic regulation. It was shown that MAP4K4-dependent signaling potently inhibits PPARγ-responsive gene expression, adipogenesis, and insulin-stimulated glucose transport. MAP4K4 is the intermediate kinase for TNF-α action on glucose uptake in human skeletal muscle cells, which is involved in JNK and ERK-1/2 activation to modulate insulin sensitivity.[2] Moreover, Map4k4 is a previously unknown mediator of cytokine expression. Importantly, silencing Map4k4 in macrophages *in vivo* protected mice from lipopolysaccharide-induced lethality by inhibiting Tnf-α and interleukin-1beta production.[3] a role for MAP4K4 in mediating inflammatory effects also exists as silencing of MAP4K4 in primary mouse T-cells prevents their activation.

MAP4K4 plays a prominent role in development, as *Drosophila* expressing mutant MAP4K4 homologues failed to undergo dorsal closure, and because deletion of MAP4K4 in mice prevented the migration of the mesoderm during gastrulation. Interestingly, the role for MAP4K4 in development appears to be mediated by ephrin receptor signaling. Further studies indicated that MAP4K4 was mediating cell migration.

Rap2 belongs to the Ras family of small GTP-binding proteins. MAP4K4 interacted with Rap2 through its C-terminal citron homology domain but did not interact with Rap1 or Ras. Interaction with Rap2 required the intact effector region of Rap2. MAP4K4 interacted preferentially with GTP-bound Rap2 over GDP-bound Rap2 *in vitro*. Rap2 enhanced MAP4K4-induced activation of JNK. Thus, MAP4K4 is a putative effector of Rap2 mediating the activation of JNK by Rap2.[4]

References:
1. Liang, J.J. et al: Clin. Cancer Res. 14:7043-9, 2008
2. Tang, X. et al: proc. Natl. Acad. Sci. USA 103:2087-92, 2006
3. Aouadi, M. et al: Nature 458:1180-4, 2009
4. Machida, N. et al: J. Biol. Chem. 279:15711-4, 2004

TECHNICAL INFORMATION

Source:
MAP4K4 antibody is a rabbit antibody raised against purified recombinant human MAP4K4 fragments expressed in *E. coli*.

Specificity and Sensitivity:
This antibody detects MAP4K4 proteins without cross-reactivity with other family members.

Storage Buffer: PBS and 30% glycerol

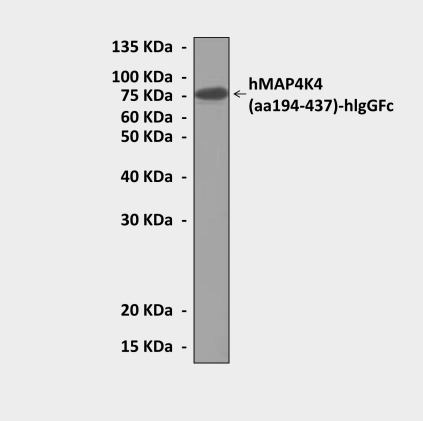
Storage:
Store at -20°C for at least one year. Store at 4°C for frequent use. Avoid repeated freeze-thaw cycles.

APPLICATIONS

Application:	*Dilution:
WB	1:1000
IP	n/d
IHC	n/d
ICC	n/d
FACS	n/d

**Optimal dilutions must be determined by end user.*

QUALITY CONTROL DATA



Western Blot detection of MAP4K4 proteins in cell extract from CHO cell transfected with hMAP4K4 (aa194-436)-hIgGFc fusion protein (72 kDa) expression vector, using MAP4K4 Antibody.