

# MKP-1 (M-18): sc-1102



The Power to Question

## BACKGROUND

A key element in the pathway involved in the transduction of signals from activated protein-tyrosine kinase transmembrane receptors has been identified as the family of mitogen-activated protein kinases (MAP kinases). The most well known of these Ser/Thr kinases are ERK 1 and ERK 2. Mitogenic stimulation of cells triggers the activation of MAP kinases through phosphorylation of both tyrosyl (Y185) and threonyl (T183) residues. Phosphorylation of the T183 and Y185 ERK regulatory site is mediated by MAP kinase (MEK), which in turn is regulated by the proto-oncogene product Raf. Two highly related phosphatases, designated MKP-1 and MKP-2, exhibit 59% sequence identity at the amino acid level and oppose the action of MEK by downregulating the kinase activity of ERK 1 and ERK 2. MAP kinase phosphatase-1 and -2 proteins function by dephosphorylating ERK 1 and ERK 2 at their T-E-Y regulatory motif. An additional phosphatase encoded by the DUSP2 gene, designated PAC-1, also functions to downregulate ERK 1 and ERK 2 kinase activity. PAC-1 is a nuclear protein whose expression is strongly induced in response to mitogen.

## CHROMOSOMAL LOCATION

Genetic locus: DUSP1 (human) mapping to 5q35.1, DUSP4 (human) mapping to 8p12; Dusp1 (mouse) mapping to 17 A3.3, Dusp4 (mouse) mapping to 8 A4.

## SOURCE

MKP-1 (M-18) is an affinity purified rabbit polyclonal antibody raised against a peptide mapping at the C-terminus of MKP-1 of mouse origin.

## PRODUCT

Each vial contains 200 µg IgG in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

MKP-1 (M-18) is available conjugated to agarose (sc-1102 AC), 500 µg/0.25 ml agarose in 1 ml, for IP.

Blocking peptide available for competition studies, sc-1102 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## APPLICATIONS

MKP-1 (M-18) is recommended for detection of MKP-1 and, to a lesser extent, MKP-2 of mouse, rat and human origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

MKP-1 (M-18) is also recommended for detection of MKP-1 and, to a lesser extent, MKP-2 in additional species, including canine, bovine and porcine.

Molecular Weight of MKP-1: 40 kDa.

Positive Controls: Hep G2 cell lysate: sc-2227, SW480 cell lysate: sc-2219 or HeLa whole cell lysate: sc-2200.

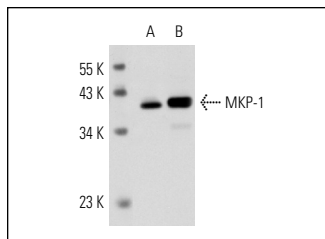
## RESEARCH USE

For research use only, not for use in diagnostic procedures.

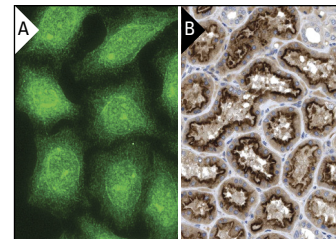
## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## DATA



MKP-1 (M-18): sc-1102. Western blot analysis of MKP-1 expression in Hep G2 (A) and SW480 (B) whole cell lysates.



MKP-1 (M-18): sc-1102. Immunofluorescence staining of methanol-fixed HeLa cells showing nuclear and cytoplasmic localization (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded human kidney tissue showing cytoplasmic and membrane staining of cells in tubules at high magnification. Kindly provided by The Swedish Human Protein Atlas (HPA) program (B).

## SELECT PRODUCT CITATIONS

- Mercurio, F., et al. 1997. IKK-1 and IKK-2: cytokine-activated IκB kinases essential for NFκB activation. *Science* 278: 860-866.
- Chang, S.W., et al. 2010. Dexamethasone reduces mitomycin C-related inflammatory cytokine expression without inducing further cell death in corneal fibroblasts. *Wound Repair Regen.* 18: 59-69.
- Tomasi, M.L., et al. 2010. S-adenosylmethionine regulates dual-specificity mitogen-activated protein kinase phosphatase expression in mouse and human hepatocytes. *Hepatology* 51: 2152-2161.
- Turpeinen T, et al. 2011. Dual specificity phosphatase 1 regulates human inducible nitric oxide synthase expression by p38 MAP kinase. *Mediators Inflamm.* 2011: 127587.
- Huo, Y., et al. 2011. Dexamethasone inhibits the Nox-dependent ROS production via suppression of MKP-1-dependent MAPK pathways in activated microglia. *BMC Neurosci.* 12: 49.
- Yu, H., et al. 2011. Anti-inflammatory effect of MAPK phosphatase-1 local gene transfer in inflammatory bone loss. *Gene Ther.* 18: 344-353.
- Yu, H., et al. 2011. MKP-1 regulates cytokine mRNA stability through selectively modulation subcellular translocation of AUF1. *Cytokine* 56: 245-255.



Try **MKP-1 (D-3): sc-271684** or **MKP-1 (E-6): sc-373841**, our highly recommended monoclonal alternatives to MKP-1 (M-18). Also, for AC, HRP, FITC, PE, Alexa Fluor® 488 and Alexa Fluor® 647 conjugates, see **MKP-1 (D-3): sc-271684**.