

# p-MEK kinase-1 (Thr 1402): sc-130202

## BACKGROUND

Mitogen-activated protein (MAP) kinase cascades are activated by various extracellular stimuli including growth factors. The MEK kinases (also designated MAP kinase kinase kinases, MKKKs, MAP3Ks or MEKKs) phosphorylate and thereby activate the MEKs (also called MAP kinase kinases or MKKs), including ERK, JNK and p38. These activated MEKs in turn phosphorylate and activate the MAP kinases. The MEK kinases include Raf-1, Raf-B, Mos, MEK kinase-1, MEK kinase-2, MEK kinase-3, MEK kinase-4, ASK 1 (MEK kinase-5) and MAP3K6 (MEK kinase-6). MEK kinase-1 activates the ERK and c-Jun NH<sub>2</sub>-terminal kinase (JNK) pathways by phosphorylation of MAP2K1 and MAP2K4, and also activates the central protein kinases of the NF $\kappa$ B pathway, CHUK and IKK $\beta$ . Additionally, MEK kinase-1 uses an E3 ligase through its PHD domain, a RING-finger-like structure, to target proteins for degradation through ubiquitination. MEK kinase-1 is autophosphorylated at two C-terminal sites within the activation loop, Thr 1402 and Thr 1414, following oligomerization.

## REFERENCES

1. Lange-Carter, C.A., et al. 1993. A divergence in the MAP kinase regulatory network defined by MEK kinase and Raf. *Science* 260: 315-319.
2. Guan, K.L. 1994. The mitogen activated protein kinase signal transduction pathway: from the cell surface to the nucleus. *Cell. Signal.* 6: 581-589.
3. Wang, X.S., et al. 1996. Molecular cloning and characterization of a novel protein kinase with a catalytic domain homologous to mitogen-activated protein kinase kinase kinase. *J. Biol. Chem.* 271: 31607-31611.
4. Fanger, G.R., et al. 1997. MEK kinases are regulated by EGF and selectively interact with Rac/Cdc42. *EMBO J.* 16: 4961-4972.
5. Siow, Y.L., et al. 1997. Identification of two essential phosphorylated threonine residues in the catalytic domain of Mekk1. Indirect activation by Pak3 and protein kinase C. *J. Biol. Chem.* 272: 7586-7594.
6. Gerwins, P., et al. 1997. Cloning of a novel mitogen-activated protein kinase kinase kinase, MEKK4, that selectively regulates the c-Jun amino-terminal kinase pathway. *J. Biol. Chem.* 272: 8288-8295.
7. Deak, J.C., et al. 1997. Regulation of the activity of MEK kinase 1 (MEKK1) by autophosphorylation within the kinase activation domain. *Biochem. J.* 322: 185-192.

## CHROMOSOMAL LOCATION

Genetic locus: Map3k3 (mouse) mapping to 11 E1.

## SOURCE

p-MEK kinase-1 (Thr 1402) is a rabbit polyclonal antibody raised against a short amino acid sequence containing Thr 1402 phosphorylated MEK kinase-1 of human origin.

## PRODUCT

Each vial contains 100  $\mu$ g IgG in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

p-MEK kinase-1 (Thr 1402) is recommended for detection of Thr 1402 phosphorylated MEK Kinase 1 and correspondingly phosphorylated Thr 1381 MEK Kinase 1 of mouse and rat origin by Western Blotting (starting dilution 1:200, dilution range 1:100-1:1000), immunoprecipitation [1-2  $\mu$ g per 100-500  $\mu$ g of total protein (1 ml of cell lysate)] and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Suitable for use as control antibody for MEK kinase-1 siRNA (m): sc-35899, MEK kinase-1 shRNA Plasmid (m): sc-35899-SH and MEK kinase-1 shRNA (m) Lentiviral Particles: sc-35899-V.

Molecular Weight of p-MEK kinase-1: 195 kDa.

## RECOMMENDED SECONDARY REAGENTS

To ensure optimal results, the following support (secondary) reagents are recommended: 1) Western blotting: use goat anti-rabbit IgG-HRP: sc-2004 (dilution range: 1:2000-1:100,000) or Cruz Marker™ compatible goat anti-rabbit IgG-HRP: sc-2030 (dilution range: 1:2000-1:5000), Cruz Marker™ Molecular Weight Standards: sc-2035, TBS Blotto B Blocking Reagent: sc-2335 (use 50 mM NaF, sc-24988, as diluent), Western Blotting Luminol Reagent: sc-2048 and Lambda Phosphatase: sc-200312A. 2) Immunoprecipitation: use Protein A/G PLUS-Agarose: sc-2003 (0.5 ml agarose/2.0 ml).

## SELECT PRODUCT CITATIONS

1. Cai, X., et al. 2011. Luteolin induced G<sub>2</sub> phase cell cycle arrest and apoptosis on non-small cell lung cancer cells. *Toxicol. In Vitro* 25: 1385-1391.
2. Chen-Deutsch, X. and Studzinski, G.P. 2012. Dual role of hematopoietic progenitor kinase 1 (HPK1) as a positive regulator of 1 $\alpha$ ,25-dihydroxyvitamin D-induced differentiation and cell cycle arrest of AML cells and as a mediator of vitamin D resistance. *Cell Cycle* 11: 1364-1373.
3. Resch, U., et al. 2014. Polyubiquitinated tristetraprolin protects from TNF-induced, caspase-mediated apoptosis. *J. Biol. Chem.* 289: 25088-25100.

## STORAGE

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

## RESEARCH USE

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

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) or our catalog for detailed protocols and support products.