

# p-ERK 1/2 (Thr 177)-R: sc-16981-R

## BACKGROUND

The activation of signal transduction pathways by growth factors, hormones and neurotransmitters is mediated through two closely related MAP kinases, p44 and p42, designated extracellular-signal related kinase 1 (ERK 1) and ERK 2, respectively. ERK proteins are regulated by dual phosphorylation at Tyrosine 204 and 187 and Threonine 177 and 160 residues mapping within a characteristic Thr-Glu-Tyr motif. Phosphorylation at both the Threonine 202 and Tyrosine 204 residues of ERK1 and Threonine 185 and Tyrosine 187 residues of ERK2 is required for full enzymatic activation. The structural consequences of dual-phosphorylation in the ERK2 include active site closure, alignment of key catalytic residues that interact with ATP, and remodeling of the activation loop. In response to activation, MAP kinases phosphorylate downstream components on serine and threonine. Upstream MAP kinase regulators include MAP kinase kinase (MEK), MEK kinase and Raf-1. The ERK family has three additional members: ERK 3, ERK 5 and ERK 6.

## REFERENCES

1. Boulton, T.G., et al. 1991. ERKs: a family of protein-Serine/Threonine kinases that are activated and tyrosine phosphorylated in response to Insulin and NGF. *Cell* 65: 663-675.
2. Payne, D.M., et al. 1991. Identification of the regulatory phosphorylation sites in pp42/mitogen-activated protein kinase (MAP kinase). *EMBO J.* 10: 885-892.
3. Boulton, T.G., et al. 1991. Purification and properties of ERK 1, an insulin-stimulated MAP2 protein kinase. *Biochemistry* 30: 278-286.
4. Crews, C.M., et al. 1992. The primary structure of MEK, a protein kinase that phosphorylates the ERK gene product. *Science* 258: 478-480.

## CHROMOSOMAL LOCATION

Genetic locus: MAPK1 (human) mapping to 22q11.21, Mapk1 (mouse) mapping to 16 A3.

## SOURCE

p-ERK 1/2 (Thr 177)-R is a rabbit polyclonal antibody raised against a short amino acid sequence containing Thr 177 phosphorylated ERK 1/2 of human origin.

## PRODUCT

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

Blocking peptide available for competition studies, sc-16981 P, (100 µg peptide in 0.5 ml PBS containing < 0.1% sodium azide and 0.2% BSA).

## 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.

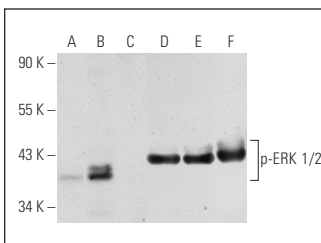
## APPLICATIONS

p-ERK 1/2 (Thr 177)-R is recommended for detection of Thr 177 phosphorylated ERK 1 and ERK 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) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

Molecular Weight of p-ERK 1/p-ERK 2: 44/42 kDa.

Positive Controls: NIH/3T3 whole cell lysate: sc-2210, HeLa + TNF $\alpha$  cell lysate: sc-2228 or HeLa + UV irradiated cell lysate: sc-2221.

## DATA



Western blot analysis of ERK 1/2 phosphorylation in untreated (A, D), UV irradiated (B, E) and UV irradiated and lambda protein phosphatase treated (C, F) HeLa whole cell lysates. Antibodies tested include p-ERK 1/2 (Thr 177/Thr 160)-R: sc-16981-R (A, B, C) and ERK 2 (K-23): sc-153 (D, E, F).

## SELECT PRODUCT CITATIONS

1. Holzer, G., et al. 2007. The dietary soy flavonoid genistein abrogates tissue factor induction in endothelial cells induced by the atherogenic oxidized phospholipid oxPAPC. *Thromb. Res.* 120: 71-79.
2. Aggarwal, S., et al. 2008. Growth suppression of lung cancer cells by targeting cyclic AMP response element-binding protein. *Cancer Res.* 68: 981-988.
3. Raskopf, E., et al. 2008. siRNA targeting VEGF inhibits hepatocellular carcinoma growth and tumor angiogenesis *in vivo*. *J. Hepatol.* 49: 977-984.
4. Roussa, E., et al. 2008. Transforming growth factor  $\beta$  cooperates with persephin for dopaminergic phenotype induction. *Stem Cells* 26: 1683-1694.
5. Zhang, Y., et al. 2009. Regulation of T cell development and activation by creatine kinase B. *PLoS ONE* 4: e5000.
6. Brody, M.J., et al. 2012. Ablation of the cardiac-specific gene leucine-rich repeat containing 10 (Lrrc10) results in dilated cardiomyopathy. *PLoS ONE* 7: e51621.
7. Sarmishtha Chatterjee, P.N., et al. 2013. Regulation of autophagy in rat hepatocytes treated *in vitro* with low concentration of mercury. *Toxicol. Environ. Chem.* 95: 504.
8. Choi, R.J., et al. 2013. Anti-inflammatory properties of anthraquinones and their relationship with the regulation of P-glycoprotein function and expression. *Eur. J. Pharm. Sci.* 48: 272-281.