SANTA CRUZ BIOTECHNOLOGY, INC.

p-ERK 1/2 (12D4): sc-81492

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

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 ERK 1, and Threonine 185 and Tyrosine 187 residues of ERK 2 is required for full enzymatic activation. The structural consequences of dual-phosphorylation in ERK 2 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.

CHROMOSOMAL LOCATION

Genetic locus: MAPK3 (human) mapping to 16p11.2, MAPK1 (human) mapping to 22q11.21; Mapk3 (mouse) mapping to 7 F3, Mapk1 (mouse) mapping to 16 A3.

SOURCE

p-ERK 1/2 (12D4) is a mouse monoclonal antibody raised against a synthetic phosphopeptide corresponding to amino acid residues surrounding the T-E-Y motif of ERK 1 of human origin.

PRODUCT

Each vial contains 50 µg IgG_1 in 0.5 ml of PBS with < 0.1% sodium azide, 0.1% gelatin, PEG and sucrose.

APPLICATIONS

p-ERK 1/2 (12D4) is recommended for detection of Thr 202 and Tyr 204 dually phosphorylated ERK 1 and ERK 2 of mouse, rat, human and canine 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)] and immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500); non cross-reactive with non-phosphorylated ERK 1/2. Requires phosphorylation at both the Thr and Tyr site.

Molecular Weight of ERK 1: 44 kDa.

Molecular Weight of ERK 2: 42 kDa.

Positive Controls: NIH/3T3 whole cell lysate: sc-2210, Jurkat + PMA cell lysate: sc-24718 or Jurkat whole cell lysate: sc-2204.

STORAGE

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

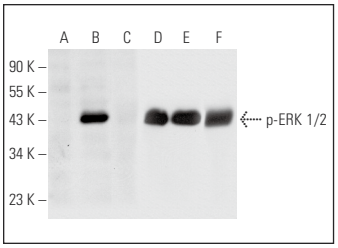
PROTOCOLS

See our web site at www.scbt.com for detailed protocols and support products.

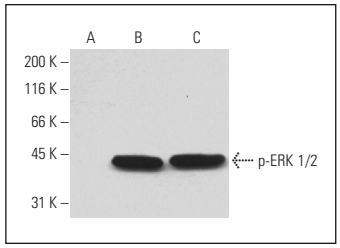
RESEARCH USE

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

DATA



Western blot analysis of ERK 1/2 phosphorylation in untreated (**A**,**D**), PMA treated (**B**,**E**) and PMA and lambda protein phosphatase treated (**C**,**F**) Jurkat whole cell lysates. Antibodies tested include p-ERK 1/2 (12D4): sc-81492 (**A**,**B**,**C**) and ERK 2 (K-23): sc-153 (**D**,**E**,**F**).



p-ERK 1/2 (12D4): sc-81492. Western blot analysis of ERK 1/2 phosphorylation in non-stimulated (**A**), EGF stimulated (**B**) and pervanadate treated (**C**) SK-OV-3 whole cell lysates.

SELECT PRODUCT CITATIONS

1. Mijatovic, S., et al. 2005. Anti-glioma action of aloe emodin: the role of ERK inhibition. Cell. Mol. Life Sci. 62: 589-598.
2. Abid, M.D., et al. 2013. Khat *(Catha edulis)* generates reactive oxygen species and promotes hepatic cell apoptosis via MAPK activation. Int. J. Mol. Med. 32: 389-395.
3. Tome-Garcia, J., et al. 2014. ERBB2 increases metastatic potentials specifically in androgen-insensitive prostate cancer cells. PLoS ONE 9: e99525.
4. Wang, X., et al. 2015. Functional characterization of TRAP1-like protein involved in modulating fibrotic processes mediated by TGF-β/Smad signaling in hypertrophic scar fibroblasts. Exp. Cell Res. 332: 202-211.
5. Liu, L., et al. 2016. RACK1 promotes maintenance of morphine-associated memory via activation of an ERK-CREB dependent pathway in hippocampus. Sci. Rep. 6: 20183.
6. Bai, Y., et al. 2017. The protective effects of PCPA against monocrotaline-induced pulmonary arterial hypertension are mediated through the down-regulation of NFAT-1 and NFκB. Int. J. Mol. Med. 40: 155-163.
7. Zhang, Y., et al. 2018. Macrophage-associated PGK1 phosphorylation promotes aerobic glycolysis and tumorigenesis. Mol. Cell 71: 201-215.e7.
8. Noyan, S., et al. 2019. Involvement of miR-770-5p in trastuzumab response in HER2 positive breast cancer cells. PLoS ONE 14: e0215894.
9. Lai, S.Y., et al. 2020. Long noncoding RNA SNHG12 modulated by human papillomavirus 16 E6/E7 promotes cervical cancer progression via ERK/Slug pathway. J. Cell. Physiol. 235: 7911-7922.

CONJUGATES

See **p-ERK (E-4): sc-7383** for p-ERK antibody conjugates, including AC, HRP, FITC, PE, and Alexa Fluor® 488, 546, 594, 647, 680 and 790.