SANTA CRUZ BIOTECHNOLOGY, INC.

p-ERK 1/2 (Tyr 204): sc-101761

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 (Tyr 204) is a rabbit polyclonal antibody raised against a short amino acid sequence containing Tyr 204 phosphorylated ERK 1/2 of human origin.

PRODUCT

Each vial contains 100 µg IgG in 1.0 ml PBS with < 0.1% sodium azide and 0.1% gelatin.

APPLICATIONS

p-ERK 1/2 (Tyr 204) is recommended for detection of Tyr 204 phosphorylated ERK 1 of human origin and correspondingly phosphorylated Tyr 205 of mouse and rat origin; and Tyr 186 phosphorylated ERK 2 of human origin and correspondingly phosphorylated Tyr 185 of mouse and rat 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 immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500).

Molecular Weight of p-ERK 1: 44 kDa.

Molecular Weight of p-ERK 2: 42 kDa.

Positive Controls: NIH/3T3 whole cell lysate: sc-2210, HeLa + TNFα cell lysate: sc-2228 or NIH/3T3 + PDGF cell lysate: sc-3803.

RESEARCH USE

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

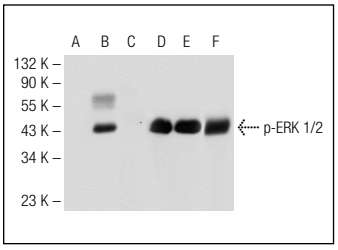
PROTOCOLS

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

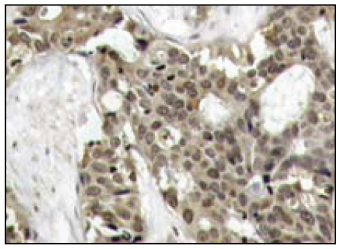
STORAGE

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

DATA



Western blot analysis of ERK 1/2 phosphorylation in untreated (**A**,**D**), PMA treated (**B**,**E**) and PMA and lambda protein phosphatase (sc-200312A) treated (**C**,**F**) Jurkat whole cell lysates. Antibodies tested include p-ERK 1/2 (Tyr 204): sc-101761 (**A**,**B**,**C**) and ERK 2 (K-23): sc-153 (**D**,**E**,**F**).



p-ERK 1/2 (Tyr 204): sc-101761. Immunoperoxidase staining of formalin-fixed, paraffin-embedded human breast carcinoma tissue showing nuclear and cytoplasmic staining.

SELECT PRODUCT CITATIONS

1. Shi, Q., et al. 2007. A novel low-molecular weight inhibitor of focal adhesion kinase, TAE226, inhibits glioma growth. Mol. Carcinog. 46: 488-496.
2. Maroni, P., et al. 2009. Sam68 and ERKs regulate leptin-induced expression of OB-Rb mRNA in C2C12 myotubes. Mol. Cell. Endocrinol. 309: 26-31.
3. Ding, Q.W., et al. 2010. Functional vanilloid receptor-1 in human submandibular glands. J. Dent. Res. 89: 711-716.
4. Yamaguchi, T., et al. 2010. Continuous mild heat stress induces differentiation of mammalian myoblasts, shifting fiber type from fast to slow. Am. J. Physiol., Cell Physiol. 298: C140-C148.
5. de Gusmão, C.V., et al. 2010. Low-intensity ultrasound increases FAK, ERK-1/2, and IRS-1 expression of intact rat bones in a noncumulative manner. Clin. Orthop. Relat. Res. 468: 1149-1156.
6. Duan, W.J., et al. 2011. Silibinin activated p53 and induced autophagic death in human fibrosarcoma HT1080 cells via reactive oxygen species-p38 and c-Jun N-terminal kinase pathways. Biol. Pharm. Bull. 34: 47-53.
7. Sandoval, Y.H., et al. 2011. Transactivation of epidermal growth factor receptor by enhanced levels of endogenous angiotensin II contributes to the overexpression of $G_{i\,\alpha}$ proteins in vascular smooth muscle cells from SHR. Cell. Signal. 23: 1716-1726.
8. Kaminski, K.A., et al. 2012. Interleukin 6 is not necessary for STAT3 phosphorylation and myocardial hypertrophy following short term β-adrenergic stimulation. Adv. Med. Sci. 57: 94-99.