abcam

ab227179

Anti-ERK1 antibody

Lab Essentials

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.4 Preservative: 0.02% Proclin 300 Constituents: 50% Glycerol (glycerin, glycerine), 48.98% TBS, 1X, 1% BSA
Form	Liquid
Clonality	Polyclonal
Immunogen	Synthetic Peptide within Human MAPK3 aa 100-200 conjugated to Keyhole Limpet Haemocyanin. The exact immunogen used to generate this antibody is proprietary information. Database link P27361
Purification technique	Affinity purification Protein A

Reactivity data

IHC-P

Tested

Species	Rat
Dilution info	1/100 - 1/500
Notes	-

Species	Human
Dilution info	1/100 - 1/500
Notes	-

Expected

Species	Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/50 - 1/200
Notes	-

Expected

Species	Rat, Mouse
Dilution info	Use at an assay dependent concentration.
Notes	-

Flow Cyt (Intra)

Tested

Species	Mouse
Dilution info	-
Notes	-

Expected

Species	Rat, Human
Dilution info	Use at an assay dependent concentration.
Notes	-

Target data

See full target information MAPK3

Function	Serine/threonine kinase which acts as an essential component of the MAP kinase signal transduction pathway (PubMed:34497368). MAPK1/ERK2 and MAPK3/ERK1 are the 2 MAPKs which play an important role in the MAPK/ERK cascade. They participate also in a signaling cascade initiated by activated KIT and KITLG/SCF. Depending on the cellular context, the MAPK/ERK cascade mediates diverse biological functions such as cell growth, adhesion, survival and differentiation through the regulation of transcription, translation, cytoskeletal rearrangements. The MAPK/ERK cascade also plays a role in initiation and regulation of meiosis, mitosis, and postmitotic functions in differentiated cells by phosphorylating a number of transcription factors. About 160 substrates have already been discovered for ERKs. Many of these substrates are localized in the nucleus, and seem to participate in the regulation of transcription upon stimulation. However, other substrates are found in the cytosol as well as in other cellular organelles, and those are responsible for processes such as translation, mitosis and apoptosis. Moreover, the MAPK/ERK cascade is also involved in the regulation of the endosomal dynamics, including lysosome processing and endosome cycling through the perinuclear recycling compartment (PNRC); as well as in the fragmentation of the Golgi apparatus during mitosis. The substrates include transcription factors (such as ATF2, BCL6, ELK1, ERF, FOS, HSF4 or SPZ1), cytoskeletal elements (such as CANX, CTTN, GJA1, MAP2, MAPT, PXN, SORBS3 or STMN1), regulators of apoptosis (such as BAD, BTG2, CASP9, DAPK1, IER3, MCL1 or PPARG), regulators of translation (such as EIF4EBP1) and a variety of other signaling-related molecules (like ARHGEF2, DEPTOR, FRS2 or GRB10) (PubMed:35216969). Protein kinases (such as RAF1, RPS6KA1/RSK1, RPS6KA3/RSK2, RPS6KA2/RSK3, RPS6KA6/RSK4, SYK, MKNK1/MNK1, MKNK2/MNK2, RPS6KA5/MSK1, RPS6KA4/MSK2, MAPKAPK3 or MAPKAPK5) and phosphatases (such as DUSP1, DUSP4, DUSP6 or DUSP16) are other substrates which enable the propagation the MAPK/ERK signal to additional cytosolic and nuclear targets, thereby extending the specificity of the cascade. Phosphorylates GJA1 at 'Ser-279' and 'Ser-282' resulting in an increase in GJA1 ubiquitination and ultimately lysosomal degradation (By similarity).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot
Storage information	Avoid freeze / thaw cycle

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	ERK1 also known as MAPK3 is an extracellular signal-regulated kinase involved in transmitting signals from the cell surface to the nucleus. This protein has a molecular mass of about 44 kDa. ERK1 expresses in various tissue types with higher expression in the brain heart and skeletal muscle. Researchers often study ERK1 in the context of its role in cellular signaling due to its involvement in critical regulatory functions.
Biological function summary	ERK1 plays a significant role in cell cycle regulation differentiation and proliferation. It forms part of the MAPK signaling cascade becoming activated through a phosphorylation event. In its activated form ERK1 translocates to the nucleus where it phosphorylates target substrates. ERK1 often functions in conjunction with its homolog ERK2 to mediate these cellular processes marking it as an essential player in growth factor signaling.
Pathways	ERK1 functions primarily within the MAPK/ERK signaling pathway a major conduit for transmitting proliferative signals from growth factor receptors. ERK1 interacts with proteins like MEK1/2 which phosphorylate and activate ERK1 in response to extracellular stimuli. Another critical pathway involving ERK1 is the Ras-Raf-MEK-ERK cascade which regulates various cellular outcomes. This connection to the Ras family highlights its importance in signal transduction and reinforces its position in critical cellular processes.
Associated diseases and disorders	Aberrant activation of ERK1 connects to diseases such as cancer and cardiovascular disorders. In cancer the dysregulation of the MAPK/ERK pathway often through mutations affecting Ras or Raf proteins leads to uncontrolled cell proliferation. ERK1's involvement in cardiovascular diseases links to its role in hypertrophic signaling in cardiac cells where altered ERK1 activity can contribute to pathological cardiac remodeling. Understanding these interactions can aid in developing therapeutic strategies targeting the MAPK/ERK signaling pathway.

Product promise

Tested

We have tested this species and application combination and it works. It is covered by our product promise.

Expected

We have not tested this specific species and application combination in-house, but expect it will work. It is covered by our product promise.

Predicted

This species and application combination has not been tested, but we predict it will work based on strong homology. However, this combination is not covered by our product promise.

Not recommended

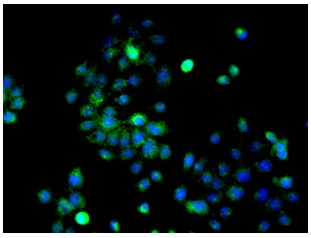
We do not recommend this combination. It is not covered by our product promise.

We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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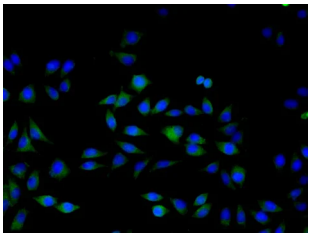
5 product images



Immunocytochemistry/ Immunofluorescence - Anti-ERK1 antibody (ab227179)

ERK1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERK1 antibody

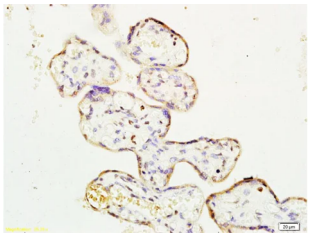
A431 (human epidermoid carcinoma cell line) cells stained for ERK1 (green) using ab227179 at 1/50 dilution in ICC/IF, followed by Goat Anti-Rabbit IgG (H+L) Alexa Fluor® 488 conjugated secondary antibody.



Immunocytochemistry/ Immunofluorescence - Anti-ERK1 antibody (ab227179)

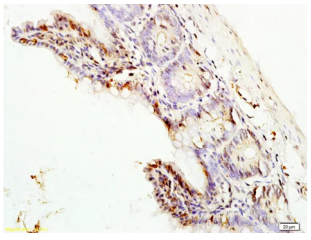
ERK1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERK1 antibody

SMMC-7721 (human hepatocarcinoma cell line) cells stained for ERK1 (green) using ab227179 at 1/50 dilution in ICC/IF, followed by Goat Anti-Rabbit IgG (H+L) Alexa Fluor® 488 conjugated secondary antibody.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERK1 antibody (ab227179)

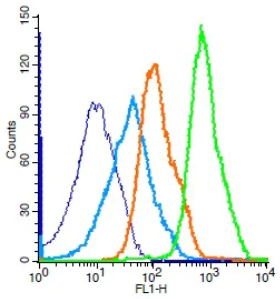
Formalin-fixed, paraffin-embedded human placenta tissue stained for ERK1 using ab227179 at 1/200 dilution in immunohistochemical analysis, followed by conjugation to the secondary antibody and DAB staining.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERK1 antibody (ab227179)

ERK1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-ERK1 antibody

Formalin-fixed, paraffin-embedded rat colon tissue stained for ERK1 using ab227179 at 1/200 dilution in immunohistochemical analysis, followed by conjugation to the secondary antibody and DAB staining.



Flow Cytometry (Intracellular) - Anti-ERK1 antibody (ab227179)

ERK1 Flow Cytometry (Intracellular) staining using rabbit Anti-ERK1 antibody

Intracellular flow cytometric analysis ofmouse splenocyteslabeling ERK1 with ab227179 at 1/50 dilution folllowed by a FITC conjugated secondary antibody (green) compared with anisotype control (orange), a secondary only control (light blue) and an unlabeled control (cells without incubation with primary antibody and secondary antibody) (blue).

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