abcam

ab32091

Anti-MEK1 antibody [E342]

Recombinant | RabMAb | KO Validated | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 50% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	E342
Purification technique	Affinity purification Protein A
Specificity	This antibody recognises MEK1, but does not cross react with other MAP kinase kinase family members.
Concentration	0.127 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-

Notes	-

Predicted

Species	Mouse, Rat, Cow, Dog
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000 - 1/5000
Notes	-

Expected

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

Predicted

Species	Cow, Dog
Dilution info	-
Notes	-

ICC/IF

Tested

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

Predicted

Species	Mouse, Rat, Cow, Dog
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Predicted

Species	Mouse, Rat, Cow, Dog
Dilution info	-
Notes	-

Target data

See full target information MAP2K1

Function

Dual specificity protein kinase which acts as an essential component of the MAP kinase signal transduction pathway. Binding of extracellular ligands such as growth factors, cytokines and hormones to their cell-surface receptors activates RAS and this initiates RAF1 activation. RAF1 then further activates the dual-specificity protein kinases MAP2K1/MEK1 and MAP2K2/MEK2. Both MAP2K1/MEK1 and MAP2K2/MEK2 function specifically in the MAPK/ERK cascade, and catalyze the concomitant phosphorylation of a threonine and a tyrosine residue in a Thr-Glu-Tyr sequence located in the extracellular signal-regulated kinases MAPK3/ERK1 and MAPK1/ERK2, leading to their activation and further transduction of the signal within the MAPK/ERK cascade. Activates BRAF in a KSR1 or KSR2-dependent manner; by binding to KSR1 or KSR2 releases the inhibitory intramolecular interaction between KSR1 or KSR2 protein kinase and N-terminal domains which promotes KSR1 or KSR2-BRAF dimerization and BRAF activation (PubMed:29433126). Depending on the cellular context, this pathway mediates diverse biological functions such as cell growth, adhesion, survival and differentiation, predominantly through the regulation of transcription, metabolism and cytoskeletal rearrangements. One target of the MAPK/ERK cascade is peroxisome proliferator-activated receptor gamma (PPARG), a nuclear receptor that promotes differentiation and apoptosis. MAP2K1/MEK1 has been shown to

export PPARG from the nucleus. The MAPK/ERK cascade is also involved in the regulation of 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.

Storage

Shipped at conditions	Conditional Ambient
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

Notes

Patented technology
Our RabMAb® technology is a patented hybridoma-based technology for making rabbit monoclonal antibodies. For details on our patents, please refer to RabMAb® patents.

What are the advantages of a recombinant monoclonal antibody?
This product is a recombinant monoclonal antibody, which offers several advantages including:

- High batch-to-batch consistency and reproducibility
- Improved sensitivity and specificity
- Long-term security of supply
- Animal-free batch production

For more information, read more on recombinant antibodies.

Supplementary info

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

Activity summary	MEK1 also known as MAP2K1 is a dual-specificity kinase that plays a role in the MAPK/ERK pathway. It has a molecular weight of around 45 kDa. MEK1 phosphorylates and activates the extracellular signal-regulated kinases ERK1 and ERK2. MEK1 is expressed in various tissues but is especially abundant in brain and heart tissues. Researchers commonly measure MEK1 levels using techniques like MEK1 ELISA while phospho-MEK antibodies help analyze its activity state.
Biological function summary	MEK1 impacts cell processes such as proliferation differentiation and survival. It does not work alone but forms a complex with other proteins to exert its function.

	MEK1 activity is tightly controlled by upstream activators and downstream targets. One of the key phosphorylation sites on MEK1 is at serine 298 often marked as MEK1 pS298. This phosphorylation indicates MEK1's activated state which is critical for its biological function.
Pathways	MEK1 integrates signals within the MAPK/ERK pathway and interacts closely with RAF kinases upstream and ERK kinases downstream. This pathway modulates cellular responses to growth factors. MEK1 undergoes phosphorylation enhancing its activity and subsequently phosphorylates ERK proteins. Many studies isolate MEK1 activity using specific inhibitors such as the MEK1 inhibitor to dissect pathway dynamics. ERK inhibitor PD98059 also helps when studying parallel interactions with MEK1.
Associated diseases and disorders	MEK1 mutations or dysregulation have links to several types of cancer including melanoma. These often involve changes that lead to continuous MEK1 activation contributing to uncontrolled cell growth. MEK1 involvement in the RASopathies also shows its connection to disorders characterized by heart and facial abnormalities. In cancer MEK1 works closely with the BRAF protein which often harbors mutations leading to disease progression showcasing MEK1 as a target for therapeutic intervention.

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

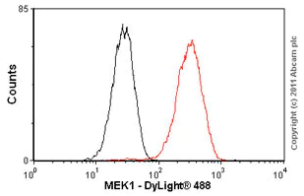
We do not recommend this combination. It is not covered by our product promise.

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.

Full details and terms and conditions can be found here:
Terms & Conditions.

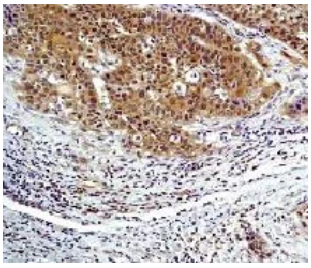
6 product images



Flow Cytometry (Intracellular) - Anti-MEK1 antibody [E342] (ab32091)

MEK1 Flow Cytometry (Intracellular) staining using rabbit Anti-MEK1 antibody

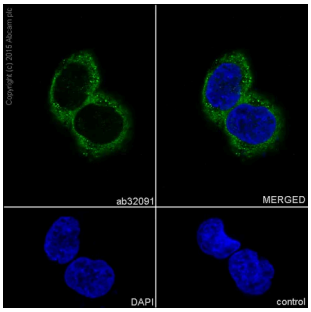
Overlay histogram showing HeLa cells stained with ab32091 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab32091, 1/100 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-rabbit IgG (H+L) (ab96899) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MEK1 antibody [E342] (ab32091)

MEK1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MEK1 antibody

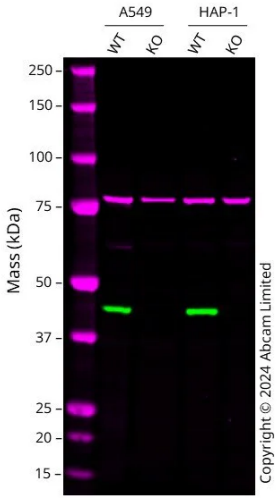
ab32091, at a 1/100 dilution, staining MEK1 in paraffin embedded human cervical carcinoma tissue by Immunohistochemistry.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-MEK1 antibody [E342] (ab32091)

MEK1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-MEK1 antibody

Immunocytochemistry/Immunofluorescence analysis of HeLa cells labelling MEK1 with purified ab32091 at dilution of 1/500. Cells were fixed with 4% Paraformaldehyde and permeabilized with 0.1% Triton X-100. ab150077, Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody. Nuclei were counterstained with DAPI (blue).
Secondary Only Control: PBS was used instead of the primary antibody as the negative control.



Western blot - Anti-MEK1 antibody [E342] (ab32091)

MEK1 Western blot staining using rabbit Anti-MEK1 antibody

Western blot: Anti-MAP2K1 antibody [E342] (ab32091) staining at 1/1000 dilution, shown in green; Mouse anti-CANX [CANX/1543] (ab238078) loading control staining at 1/20000 dilution, shown in magenta. In Western blot, ab32091 was shown to bind specifically to MAP2K1. A band was observed at 45 kDa in wild-type A549 cell lysates with no signal observed at this size in MAP2K1 knockout cell line. To generate this image, wild-type and MAP2K1 knockout A549 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 3 % milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution.
All lanes:
Western blot - Anti-MEK1 antibody [E342] (ab32091) at 1/1000 dilution

Lane 1:
Wild-type A549 cell lysate at 20 µg

Lane 2:
MAP2K1 knockout A549 cell lysate at 20 µg

Lane 3:
Wild-type HAP1 cell lysate at 20 µg

Lane 4:
MAP2K1 knockout HAP1 cell lysate at 20 µg

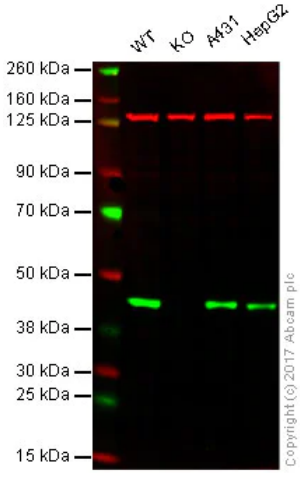
Secondary

All lanes:
Goat anti-Rabbit IgG H&L 800CW and Goat anti-Mouse IgG H&L 680RD at 1/20000 dilution

Performed under reducing conditions.

Predicted band size: 43 kDa

Observed band size: 45 kDa



Western blot - Anti-MEK1 antibody [E342] (ab32091)

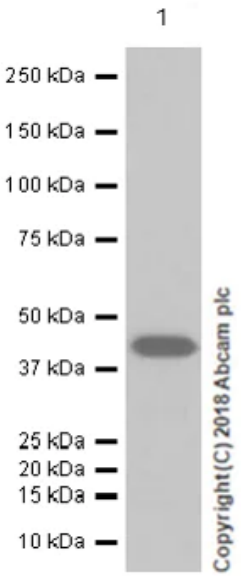
MEK1 Western blot staining using rabbit Anti-MEK1 antibody

Lane 1: Wild-type HAP1 whole cell lysate (20 µg)
Lane 2: MEK1 knockout HAP1 whole cell lysate (20 µg)
Lane 3: A431 whole cell lysate (20 µg)
Lane 4: HepG2 whole cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab32091 observed at 43 kDa. Red - loading control, ab18058, observed at 130 kDa.

ab32091 was shown to specifically react with MEK1 in wild-type HAP1 cells as signal was lost in MEK1 knockout cells. Wild-type and MEK1 knockout samples were subjected to SDS-PAGE. ab32091 and ab18058 (Mouse anti-Vinculin loading control) were incubated overnight at 4°C at 1/1000 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-MEK1 antibody [E342] (ab32091)

Predicted band size: 43 kDa



Western blot - Anti-MEK1 antibody [E342] (ab32091)

Blocking/Diluting buffer and concentration: 5% NFDM /TBST
All lanes:
Western blot - Anti-MEK1 antibody [E342] (ab32091) at 1/5000 dilution

All lanes:
A431 (Human epidermoid carcinoma epithelial cell) whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 43 kDa

Observed band size: 45 kDa

Exposure time: 15s

Please note: All products are 'FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC OR THERAPEUTIC PROCEDURES'.