abcam

ab309510

Anti-FOXK1/MNF antibody [EPR27320-65]

Anti-FOXK1/MNF antibody [EPR27320-65] is a Rabbit Monoclonal antibody that is used in FOXK1/MNF ChIP-seq, Flow Cytometry (Intra), ICC/IF, IHC-P, IP, Western Blot. Suitable for Human, Mouse, Rat samples.

FOXK1, also known as myocyte nuclear factor (MNF), is a transcriptional regulator involved in various cellular processes such as glucose metabolism, muscle cell differentiation, and autophagy. It binds to specific DNA sequences to modulate gene expression, playing a key role in cell cycle regulation and metabolic reprogramming

Recombinant | RabMAb | Advanced Validation | 20ul selling size

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR27320-65
Purification technique	Affinity purification Protein A
Concentration	0.517 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

IHC-P

Tested

Species	Human
Dilution info	1/2000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Mouse
Dilution info	1/2000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/2000
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

ICC/IF

Tested

Species	Human
Dilution info	1/50

Notes	-

Species	Mouse
Dilution info	1/50
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/500
Notes	-

Species	Mouse
Dilution info	1/500
Notes	-

Expected

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

IP

Tested

Species	Human
Dilution info	1/30

Notes	-

Species	Mouse
Dilution info	1/30
Notes	-

Expected

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

ChIP-seq

Tested

Species	Human
Dilution info	8 µg for 10^7 Cells
Notes	-

Expected

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

Target data

See full target information FOXK1

Function	Transcriptional regulator involved in different processes such as glucose metabolism, aerobic glycolysis, muscle cell differentiation and autophagy (By similarity). Recognizes and binds the forkhead DNA sequence motif (5'-GTAAACA-3') and can both act as a transcription activator or repressor, depending on the context (PubMed:17670796). Together with FOXK2, acts as a key regulator of metabolic reprogramming towards aerobic glycolysis, a process in which glucose is converted to lactate in the presence of oxygen (By similarity). Acts by promoting expression of enzymes for glycolysis (such as hexokinase-2 (HK2), phosphofructokinase, pyruvate kinase (PKLR) and lactate dehydrogenase), while suppressing further oxidation of pyruvate in the mitochondria by up-regulating

pyruvate dehydrogenase kinases PDK1 and PDK4 (By similarity). Probably plays a role in gluconeogenesis during overnight fasting, when lactate from white adipose tissue and muscle is the main substrate (By similarity). Involved in mTORC1-mediated metabolic reprogramming: in response to mTORC1 signaling, translocates into the nucleus and regulates the expression of genes associated with glycolysis and downstream anabolic pathways, such as HIF1A, thereby regulating glucose metabolism (By similarity). Together with FOXK2, acts as a negative regulator of autophagy in skeletal muscle: in response to starvation, enters the nucleus, binds the promoters of autophagy genes and represses their expression, preventing proteolysis of skeletal muscle proteins (By similarity). Acts as a transcriptional regulator of the myogenic progenitor cell population in skeletal muscle (By similarity). Binds to the upstream enhancer region (CCAC box) of myoglobin (MB) gene, regulating the myogenic progenitor cell population (By similarity). Promotes muscle progenitor cell proliferation by repressing the transcriptional activity of FOXO4, thereby inhibiting myogenic differentiation (By similarity). Involved in remodeling processes of adult muscles that occur in response to physiological stimuli (By similarity). Required to correct temporal orchestration of molecular and cellular events necessary for muscle repair (By similarity). Represses myogenic differentiation by inhibiting MEFC activity (By similarity). Positively regulates Wnt/beta-catenin signaling by translocating DVL into the nucleus (PubMed:25805136). Reduces virus replication, probably by binding the interferon stimulated response element (ISRE) to promote antiviral gene expression (PubMed:25852164). Accessory component of the polycomb repressive deubiquitinase (PR-DUB) complex; recruits the PR-DUB complex to specific FOXK1-bound genes (PubMed:24634419, PubMed:30664650). Acts as an indirect positive regulator of ferroptosis following phosphorylation by isoform Beta-II of PRKCB by promoting expression and subsequent secretion of LGALS13 (PubMed:40246981).

Storage

Shipped at conditions	Conditional Ambient
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

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	The FOXK1/MNF protein often called Forkhead Box K1 is a transcription factor that regulates gene expression linked to cell proliferation and differentiation. It has the molecular weight of approximately 84 kDa. Expressed in various tissues including muscle and brain FOXK1/MNF plays an essential role in regulating specific gene targets. The protein interacts with DNA via its forkhead domain influencing the transcriptional activity of numerous genes important for cellular functions.
Biological function summary	FOXK1/MNF is involved in the regulation of cell cycle progression and muscle regeneration. It forms part of a transcriptional complex that modulates gene expression to control these processes. In muscle tissue FOXK1/MNF influences the activation of satellite cells which are necessary for muscle repair and growth. This protein's function in regulating cellular proliferation highlights its significance in tissue development and regeneration.
Pathways	The FOXK1/MNF protein is instrumental in the Wnt signaling and PI3K/AKT pathways. These pathways are significant for controlling cell proliferation differentiation and survival. Within these pathways FOXK1/MNF interacts with proteins such as beta-catenin in the Wnt signaling pathway. Through these interactions it modulates the transcription of genes responsible for various cellular functions further underlining its role in tissue regeneration and cancer development.
Associated diseases and disorders	FOXK1/MNF links notably with certain cancers and muscular dystrophies. In cancer its overexpression can lead to unchecked cell proliferation and tumor growth interacting closely with proteins like PTEN a known tumor suppressor. In muscular dystrophy FOXK1/MNF may influence the disease progression by affecting the muscle regeneration process a vital element in maintaining muscle integrity. Understanding its expression and regulation can provide insights into the mechanisms driving these diseases and offer targets for potential therapeutic interventions.

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.

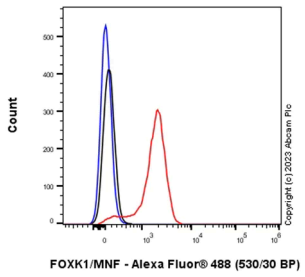
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

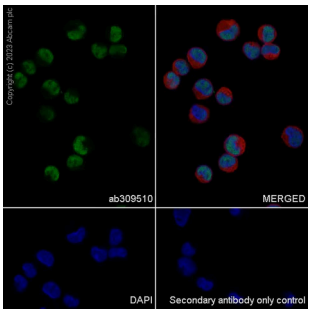
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17 product images



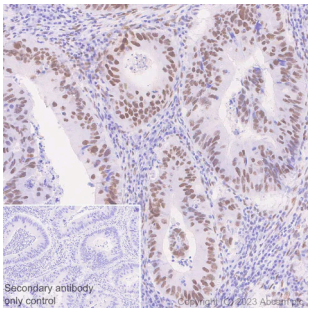
Flow Cytometry (Intracellular) - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510)

Flow cytometric analysis of 4% paraformaldehyde fixed 90% methanol permeabilized K-562 (human chronic myelogenous leukemia lymphoblast) cells labelling FOXK1/MNF with ab309510 at 1/500 dilution (0.1 ug)/Red (Red) compared with a Rabbit monoclonal IgG (ab172730) (Black) isotype control and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (Blue). A Goat Anti-Rabbit IgG (Alexa Fluor® 488, ab150081) at 1/5000 dilution was used as the secondary antibody.



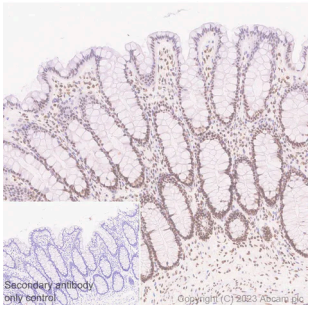
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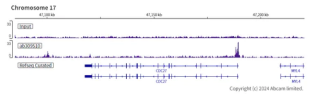
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510)

Immunohistochemical analysis of paraffin-embedded Human colon carcinom tissue labeling FOXK1/MNF with ab309510 at 1/2000 (0.259 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on human colon carcinoma (PMID: 27223064, PMID: 28623323). The section was incubated with ab309510 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Heat mediated antigen retrieval was performed with Tris-EDTA buffer (pH 9.0, Epitope Retrieval Solution2) for 20 mins



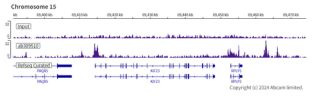
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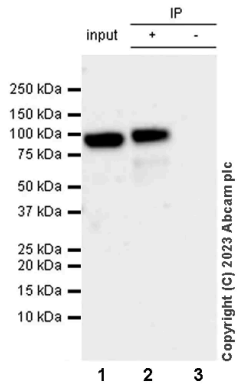
ChIP-sequencing - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510)

Chromatin was prepared from HeLa cells. Cells were fixed with 1.5 mM EGS for 30 min, combined with 1% formaldehyde for 10 min. ChIP was performed with 10^7 cells and 8 µg of ab309510 [EPR27320-65]. ChIP DNA was sequenced on the Illumina NovaSeq 6000 to a depth of 30 million reads. The input control is also shown.



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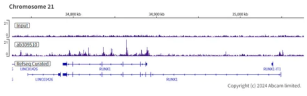
FOXK1/MNF was immunoprecipitated from 0.35 mg HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate with ab309510 at 1/30 dilution (2ug in 0.35mg lysates). Western blot was performed on the immunoprecipitate using ab309510 at 1/1000 dilution. VeriBlot for IP secondary antibody(HRP)(ab131366) was used at 1/5000 dilution. Lane 1: HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate Lane 2: ab309510 IP in HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate Lane 3:Rabbit monoclonal IgG (ab172730) instead of ab309510 in HeLa whole cell lysate Blocking and dilution buffer and concentration: 5% NFDM/TBST. Exposure time: 84 seconds Lysate was freshly made and used for Immunoprecipitation immediately to minimize protein degradation.
All lanes:
Immunoprecipitation - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510) at 1/30 dilution

All lanes:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate

Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Exposure time: 84s



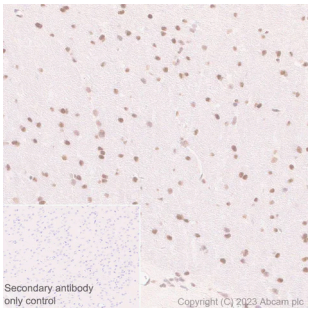
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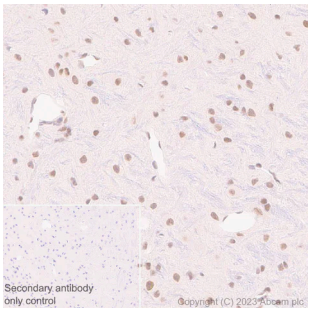
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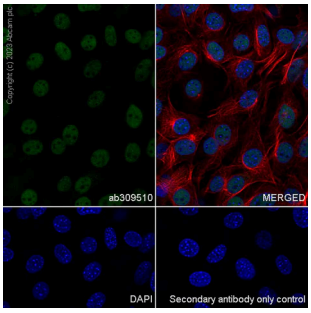
Immunohistochemical analysis of paraffin-embedded Rat cerebrum tissue labeling FOXK1/MNF with ab309510 at 1/2000 (0.259 ug/ml) followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on rat cerebrum.The section was incubated with ab309510 for 30 mins at room temperature.The immunostaining was performed on a Leica Biosystems BOND® RX instrument Counterstained with Hematoxylin. Secondary antibody only control: Secondary

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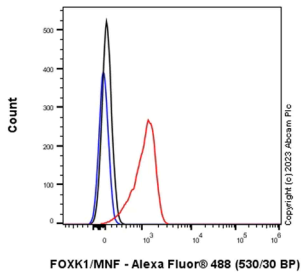
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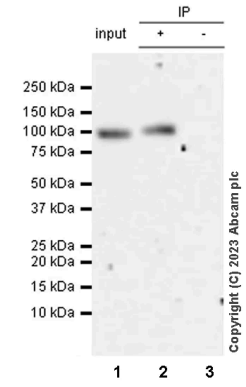
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All lanes:

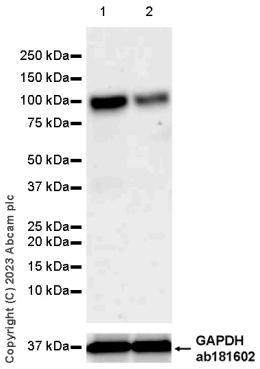
Immunoprecipitation - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510) at 1/30 dilution

All lanes:
NIH/3T3 (mouse embryonic fibroblast) whole cell lysate

Secondary

All lanes:
Immunoprecipitation - VeriBlot for IP Detection Reagent (HRP) (ab131366) at 1/5000 dilution

Exposure time: 3min



Western blot - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510)

Blocking and diluting buffer and concentration: 5% NFDM/TBST In Western blot, anti-GAPDH antibody (ab181602) loading control staining at 1/200000 dilution. Exposure time: 81 seconds
All lanes:
Western blot - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510) at 1/1000 dilution

Lane 1:
K-562 (human chronic myelogenous leukemia lymphoblast) transfected with scrambled siRNA control whole cell lysate at 20 µg

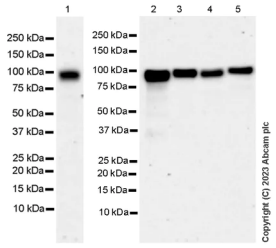
Lane 2:
K-562 transfected with siRNA specifically targeti FOXK1/MNF whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 95 kDa

Exposure time: 81s



Western blot - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510)

Blocking and diluting buffer and concentration: 5% NFDM/TBST Lysates were freshly made and used for Western blotting immediately to minimize protein degradation. Exposure time: 147 seconds
All lanes:
Western blot - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510) at 1/1000 dilution

Lane 1:
HepG2 (human hepatocellar carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 2:
HeLa (human cervical adenocarcinoma epithelial cell) whole cell lysate at 20 µg

Lane 3:
293T (human embryonic kidney epithelial cell) whole cell lysate at 20 µg

Lane 4:
NIH/3T3 (mouse embryonic fibroblast) whole cell lysate at 20 µg

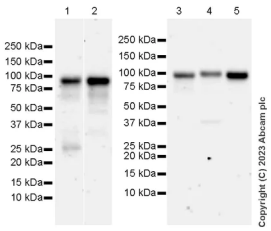
Lane 5:
PC-12 (rat adrenal gland pheochromocytoma cell) whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 95 kDa

Exposure time: 147s



Western blot - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510)

Blocking and diluting buffer and concentration: 5% NFDM/TBST Lysates were freshly made and used for Western blotting immediately to minimize protein degradation. Exposure time: 3 minutes
All lanes:
Western blot - Anti-FOXK1/MNF antibody [EPR27320-65] (ab309510) at 1/1000 dilution

Lane 1:
Rat brain tissue lysate at 20 µg

Lane 2:
Rat liver tissue lysate at 20 µg

Lane 3:
Mouse brain tissue lysate at 20 µg

Lane 4:
Mouse liver tissue lysate at 20 µg

Lane 5:
Mouse testis tissue lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Observed band size: 95 kDa

Exposure time: 3min

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