abcam

ab110277

Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7]

Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277) is a mouse monoclonal antibody detecting ATPase Inhibitory Factor 1/IF1 in **Western Blot, Flow Cytometry, ICC/IF**. Suitable for **Cow, Human, Mouse, Rat**.

- KO validated for confirmed specificity
- Over 20 publications

KO Validated

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.5 Preservative: 0.02% Sodium azide Constituents: HEPES buffered saline
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	5E2D7
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	The purity of ab110277 is near homogeneity, as judged by SDS-PAGE. ab110277 was produced in vitro using hybridomas grown in serum-free medium, and then purified by biochemical fractionation.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

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

WB

Tested

Species	Mouse
Dilution info	1 µg/mL
Notes	-

Species	Rat
Dilution info	1 µg/mL
Notes	-

Species	Cow
Dilution info	1 µg/mL
Notes	-

Species	Human
Dilution info	1 µg/mL
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	10 µg/mL
Notes	-

Expected

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

Target data

See full target information ATP5IF1

Function	Endogenous F(1)F(o)-ATPase inhibitor limiting ATP depletion when the mitochondrial membrane potential falls below a threshold and the F(1)F(o)-ATP synthase starts hydrolyzing ATP to pump protons out of the mitochondrial matrix (PubMed:35926043). Required to avoid the consumption of cellular ATP when the F(1)F(o)-ATP synthase enzyme acts as an ATP hydrolase. Indirectly acts as a regulator of heme synthesis in erythroid tissues: regulates heme synthesis by modulating the mitochondrial pH and redox potential, allowing FECH to efficiently catalyze the incorporation of iron into protoporphyrin IX to produce heme.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C
Storage information	Do Not Freeze

Notes

What is this antibody validated in?
Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277) is a mouse monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Flow Cyt), Immunocytochemistry/immunofluorescence (ICC/IF) in Cow, Human, Mouse, Rat samples.

What is the molecular weight of ATPase Inhibitory Factor 1/IF1?
Anti-ATPase Inhibitory Factor 1/IF1 [5E2D7] (ab110277) specifically detects a band for ATPase Inhibitory Factor 1/IF1 (UniProt: Q03344) at a molecular weight of 12kDa.

Trusted by the scientific community
Anti-ATPase Inhibitory Factor 1/IF1 [5E2D7] (ab110277) was first used in a scientific publication in 2011 and has been cited over 20 times in peer-reviewed journals.

Specificity confirmed
The specificity of Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277) has been confirmed by Western blot testing in ATP5IF1 Knockout HAP1 cells.

Want a custom formulation?
This antibody clone is manufactured by Abcam. If you require a custom buffer formulation or conjugation for your experiments, please contact orders@abcam.com

Supplementary info

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

Activity summary	ATPase Inhibitory Factor 1 (IF1) also referred to as IF1 protein ATPIF1 or ATPase inhibitory factor 1 is a small protein with a mass of approximately 12 kDa. It is expressed primarily in mitochondria-rich tissues such as the heart liver and brain where it plays an important role in energy metabolism. IF1 is notable for its ability to bind to the F1 subunit of the mitochondrial ATP synthase inhibiting its ATPase activity under specific conditions.
Biological function summary	IF1 influences mitochondrial function by regulating ATP synthase in response to changes in the cellular environment. Under conditions of low cellular energy IF1 stabilizes and prevents hydrolysis of ATP by binding to the F1 catalytic domain of the enzyme. This regulation helps to conserve ATP critical for maintaining cellular viability during stress. IF1 can also interact with other mitochondrial proteins to form complexes that influence energy homeostasis in the cell.
Pathways	IF1 integrates into pathways involved in cellular energy management including oxidative phosphorylation and ATP synthesis pathways. It interacts significantly with proteins such as the mitochondrial F1Fo-ATP synthase complex. By modulating ATP synthase activity IF1 ensures efficient ATP production and maintains mitochondrial membrane potential important for proper cell function.
Associated diseases and disorders	IF1 has associations with metabolic conditions and cancer. Abnormal expression or activity of IF1 correlates with mitochondrial dysfunction often observed in cancer cells where it affects cell proliferation. Additionally IF1 has links to cardiac conditions given its role in regulating heart metabolism. It relates to proteins like the cytochrome c oxidase influencing cellular respiration and affecting disease progression.

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.

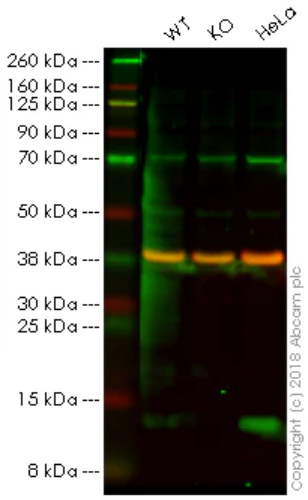
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In the unlikely event of one of our products not working as expected, you are covered by our product promise.

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6 product images



Western blot - Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277)

ATPase Inhibitory Factor 1/IF1 Western blot staining using mouse Anti-ATPase Inhibitory Factor 1/IF1 antibody

Lanes 1 - 3: Merged signal (red and green). Green - ab110277 observed at 12 kDa. Red - loading control, ab181602, observed at 37 kDa.

ab110277 was shown to recognize ATPase Inhibitory Factor 1 / IF1 in wild-type HAP1 cells as signal was lost at the expected MW in ATPase Inhibitory Factor 1 / IF1 knockout cells. Additional cross-reactive bands were observed in the wild-type and knockout cells. Wild-type and ATPase Inhibitory Factor 1 / IF1 knockout samples were subjected to SDS-PAGE. ab110277 and ab181602 (Rabbit anti-GAPDH loading control) were incubated overnight at 4°C at 1 µg/ml and 1/20000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preabsorbed ab216772 and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed ab216777 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.
All lanes:
Western blot - Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277) at 1 µg/mL

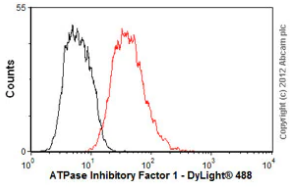
Lane 1:
Wild-type HAP1 whole cell lysate at 20 µg

Lane 2:
ATPase Inhibitory Factor 1 / IF1 knockout HAP1 whole cell lysate at 20 µg

Lane 3:

HeLa whole cell lysate at 20 µg

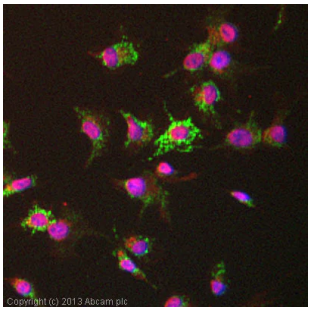
Predicted band size: 12 kDa



Flow Cytometry - Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277)

ATPase Inhibitory Factor 1/IF1 Flow Cytometry staining using mouse Anti-ATPase Inhibitory Factor 1/IF1 antibody

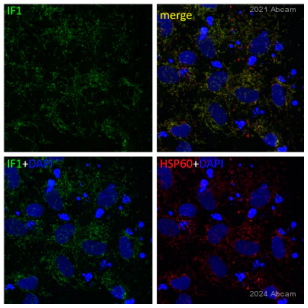
Overlay histogram showing HepG2 cells stained with ab110277 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab110277, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab91353) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.



Immunocytochemistry/ Immunofluorescence - Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277)

ATPase Inhibitory Factor 1/IF1 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-ATPase Inhibitory Factor 1/IF1 antibody

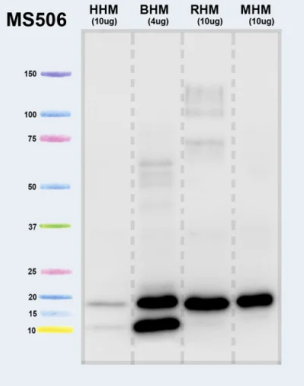
ICC/IF image of ab110277 stained HepG2 cells. The cells were 4% formaldehyde fixed (10 min) and then incubated in 1%BSA / 10% normal goat serum / 0.3M glycine in 0.1% PBS-Tween for 1h to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab110277, 10µg/ml) overnight at +4°C. The secondary antibody (green) was ab96879, DyLight® 488 goat anti-mouse IgG (H+L) used at a 1/250 dilution for 1h. Alexa Fluor® 594 WGA was used to label plasma membranes (red) at a 1/200 dilution for 1h. DAPI was used to stain the cell nuclei (blue) at a concentration of 1.43µM



This image is courtesy of an anonymous customer review

Immunocytochemistry - Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277)

Immunocytochemistry analysis of paraformaldehyde-fixed rat primary cardiac fibroblasts permeabilized with 1% Triton for 4 min staining with ab110277 at 1/50 dilution. Secondary antibody was Dylight™ 488 donkey anti mouse at 1/100 dilution. Samples were incubated with the primary antibody with PBST for 30 minutes at 25°C



Western blot - Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277)

All lanes:
Western blot - Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277) at 1 µg/mL

Lane 1:
Human heart mitochondria at 10 µg

Lane 2:
Bovine heart mitochondria at 4 µg

Lane 3:
Rat heart mitochondria at 10 µg

Lane 4:
Mouse heart mitochondria at 10 µg

Predicted band size: 12 kDa

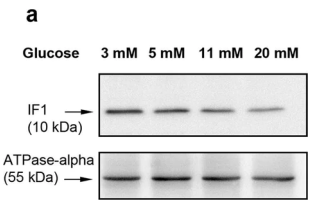


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Western blot - Anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] (ab110277)

ATPase Inhibitory Factor 1/IF1 Western blot staining using mouse Anti-ATPase Inhibitory Factor 1/IF1 antibody

ATPase Inhibitory Factor 1/IF1 western blot using anti-ATPase Inhibitory Factor 1/IF1 antibody [5E2D7] ab110277. Publication image and figure legend from Kahancová, A., Sklenář, F., et al., 2020, Sci Rep, PubMed 32005857.

ab110277 was used in this publication in western blot. This may not be the same as the application(s) guaranteed by Abcam. For a full list of applications guaranteed by Abcam for ab110277 please see the product overview.

Effect of glucose concentrations on relative IF1 protein levels in INS-1E cells. Cells were incubated for 8 h with modified culturing medium with adjusted glucose levels. As non-treated controls, we used INS-1E cells incubated at standard 11 mM glucose. (a) Representative western-blot, (b) quantification of protein levels. (c) Relative mRNA levels in INS-1E cells incubated for 8 h with modified culturing medium with adjusted glucose levels. As non-treated controls, we used INS-1E cells incubated at standard 11 mM glucose. Significance was determined by the Kruskal–Wallis's test followed by posthoc Dunnett's multiple comparisons to control. p values are indicated as follows: *p < 0.05, **p < 0.005, ***p < 0.0005.

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