abcam

ab14730

# Anti-ATPB antibody [3D5] - Mitochondrial Marker

Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730) is a mouse monoclonal antibody detecting ATPB in **Western Blot, Flow Cytometry, IHC-P, ICC/IF**. Suitable for **Caenorhabditis elegans, Cow, Human, Mouse, Rat**.

- Over 250 publications
- Trusted since 2004

Lab Essentials

## Key facts

| | |
|---|---|
| **Isotype** | IgG1 |
| **Host species** | Mouse |
| **Storage buffer** | pH: 7.4 - 7.5 Preservative: 0.02% Sodium azide Constituents: HEPES buffered saline |
| **Form** | Liquid |
| **Clonality** | Monoclonal |
| **Clone number** | 3D5 |
| **Purity** | IgG fraction |
| **Specificity** | Human and Bovine complex V beta subunit (ATPB). |
| **Light chain type** | kappa |
| **Concentration** | 1 mg/mL The concentration of this product may be batch-dependent<br>Batch concentration finder → |
| **Purification notes** | Near homogeneity as judged by SDS-PAGE. The antibody 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/mL |
| **Notes** | ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody. |

## Expected

| | |
|---|---|
| **Species** | Mouse |
| **Dilution info** | - |
| **Notes** | - |

| | |
|---|---|
| **Species** | Rat |
| **Dilution info** | - |
| **Notes** | - |

| | |
|---|---|
| **Species** | Cow |
| **Dilution info** | - |
| **Notes** | - |

| | |
|---|---|
| **Species** | Caenorhabditis elegans |
| **Dilution info** | 1 µg/mL |
| **Notes** | ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody. |

## Predicted

| | |
|---|---|
| **Species** | Pig, Common marmoset, Cat, Dog, Goat |
| **Dilution info** | - |
| **Notes** | - |

# WB

## Tested

| | |
|---|---|
| **Species** | Mouse |
| **Dilution info** | 0.5 µg/mL |
| **Notes** | - |

| | |
|---|---|
| **Species** | Rat |
| **Dilution info** | 0.5 µg/mL |
| **Notes** | - |

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 0.5 µg/mL |
| **Notes** | - |

| | |
|---|---|
| **Species** | Cow |
| **Dilution info** | 0.5 µg/mL |
| **Notes** | - |

### Expected

| | |
|---|---|
| **Species** | Caenorhabditis elegans |
| **Dilution info** | 0.5 µg/mL |
| **Notes** | - |

### Predicted

| | |
|---|---|
| **Species** | Pig, Common marmoset, Cat, Dog, Goat |
| **Dilution info** | - |
| **Notes** | - |

## IHC-P

### Tested

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | - |
| **Notes** | - |

### Expected

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

### Predicted

| | |
|---|---|
| **Species** | Pig, Common marmoset, Cat, Dog, Goat |
| **Dilution info** | - |
| **Notes** | - |

## ICC/IF

### Tested

| | |
|---|---|
| **Species** | Human |
| **Dilution info** | 1-2 µg/mL |
| **Notes** | - |

### Expected

| | |
|---|---|
| **Species** | Mouse |
| **Dilution info** | - |
| **Notes** | - |

| | |
|---|---|
| **Species** | Rat |
| **Dilution info** | - |
| **Notes** | - |

| | |
|---|---|
| **Species** | Cow |
| **Dilution info** | - |
| **Notes** | - |

| | |
|---|---|
| **Species** | Caenorhabditis elegans |
| **Dilution info** | 1-2 µg/mL |

| | |
|---|---|
| **Notes** | - |

### Predicted

| | |
|---|---|
| **Species** | Pig, Common marmoset, Cat, Dog, Goat |
| **Dilution info** | - |
| **Notes** | - |

## Target data

See full target information ATP5F1B

| | |
|---|---|
| **Function** | Catalytic subunit beta, of the mitochondrial membrane ATP synthase complex (F(1)F(0) ATP synthase or Complex V) that produces ATP from ADP in the presence of a proton gradient across the membrane which is generated by electron transport complexes of the respiratory chain (Probable) (PubMed:37244256). ATP synthase complex consist of a soluble F(1) head domain - the catalytic core - and a membrane F(1) domain - the membrane proton channel (PubMed:37244256). These two domains are linked by a central stalk rotating inside the F(1) region and a stationary peripheral stalk (PubMed:37244256). During catalysis, ATP synthesis in the catalytic domain of F(1) is coupled via a rotary mechanism of the central stalk subunits to proton translocation (Probable). In vivo, can only synthesize ATP although its ATP hydrolase activity can be activated artificially in vitro (By similarity). With the subunit alpha (ATP5F1A), forms the catalytic core in the F(1) domain (PubMed:37244256). |

## 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 |

## Notes

**What is this antibody validated in?**
Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730) is a mouse monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Flow Cyt), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Caenorhabditis elegans, Cow, Human, Mouse, Rat samples.

**What is the molecular weight of ATPB?**
Anti-ATPB [3D5] - Mitochondrial Marker (ab14730) specifically detects a band for ATPB (UniProt: P06576) at a molecular weight of 52kDa.

**Trusted by the scientific community**
Anti-ATPB [3D5] - Mitochondrial Marker (ab14730) was first used in a scientific publication in 2004 and has been cited over 250 times in peer-reviewed journals.

**Reviewed by scientists**
Anti-ATPB [3D5] - Mitochondrial Marker (ab14730) has over 40 independent reviews from customers.

**Other related products**
We have a range of other formats of antibody clone [3D5] also available for your convenience: ab14730, Alexa Fluor® 647 - ab197649, Alexa Fluor® 488 - ab197904, HRP - ab197905

**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** | ATPB also known as ATP synthase subunit beta is an essential protein component of the ATP synthase complex. It has an approximate mass of 52 kDa and is primarily expressed in the mitochondria. The protein's role is to catalyze the production of adenosine triphosphate (ATP) from adenosine diphosphate (ADP) and inorganic phosphate utilizing the proton gradient across the inner mitochondrial membrane. This process is central to the cellular energy production often referred to as oxidative phosphorylation. ATPB is frequently used as a mitochondrial marker in research making it an important target for antibodies such as those conjugated with Alexa Fluor 647 for immunofluorescence applications. |
| **Biological function summary** | ATPB functions as part of the mitochondrial ATP synthase complex which is also known as complex V of the electron transport chain. This complex is important for maintaining cellular energy homeostasis through ATP production. ATPB contributes to the catalytic activity necessary for ATP synthesis therefore supporting various cellular processes that require energy input such as muscle contraction and active transport. The protein also plays a role in coupling the proton motive force to ATP synthesis a function critical for mitochondrial efficiency and metabolic health. |
| **Pathways** | ATPB involves itself significantly in the oxidative phosphorylation and glycolysis pathways. It partners with other proteins in the ATP synthase complex such as ATP |

| | |
|---|---|
| | synthase subunit alpha (ATP5A1) to effectuate the conversion of energy. In the broader scope of energy metabolism ATPB integrates with glycolysis where glycolytic end-products feed into oxidative phosphorylation sustaining the cell's energy currency. Both pathways are important for cells especially in tissues with high energy demands like the heart and skeletal muscles. |
| **Associated diseases and disorders** | ATPB has been implicated in mitochondrial dysfunction-related diseases such as mitochondrial myopathy and Leigh syndrome. These conditions often result from mutations or defects in components of the electron transport chain leading to impaired ATP production. ATPB's close connection to ATP5A1 and other complex V proteins highlights its involvement in these disorders. Understanding ATPB's role and function helps in disease mechanism elucidation and potentially offers targets for therapeutic interventions in mitochondrial-related diseases. |

## 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**

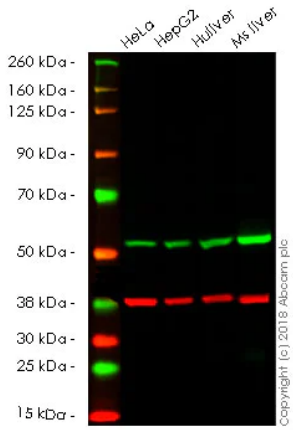
We do not recommend this combination. It is not covered by our product promise.

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.

## 7 product images




## Western blot - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

ATPB Western blot staining using mouse Anti-ATPB antibody

Merged signal (red and green). Green - ab14730 observed at 52 kDa. Red - loading control, ab181602 observed at 37 kDa.
Samples were subjected to SDS-PAGE. ab14730 and ab181602 (Rabbit anti-GAPDH loading control) were incubated overnight at 4°C at 1ug/mL and 1/10000 dilution respectively. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) (ab216773) and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216777) secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

Lane 1:
HeLa at 20 µg

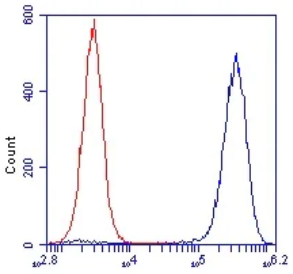
Lane 2:
HepG2 at 20 µg

Lane 3:
Hu liver at 20 µg

Lane 4:
Ms liver at 20 µg

Performed under reducing conditions.

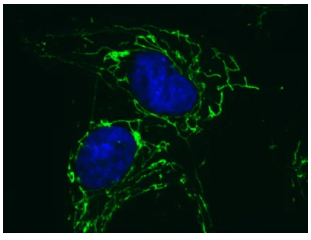
Predicted band size: 56 kDa




## Flow Cytometry - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

ATPB Flow Cytometry staining using mouse Anti-ATPB antibody

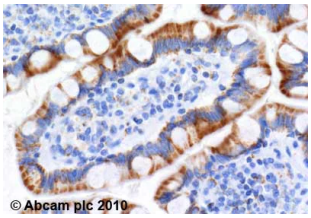
ab14730 (blue) at 1µg/ml staining ATPB in HL-60 cells and analyzed by Flow cytometry. Red histogram represents equal quantity of isotype control.



## Immunocytochemistry/ Immunofluorescence - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

ATPB Immunocytochemistry/ Immunofluorescence staining using mouse Anti-ATPB antibody

ab14730 staining ATPB in cultured human fibroblasts. Cells were fixed, permeabilized and then labelled with ab14730 followed by an AlexaFluor® 488-conjugated Goat anti-Mouse IgG1-specific secondary antibody (2 µg/ml)

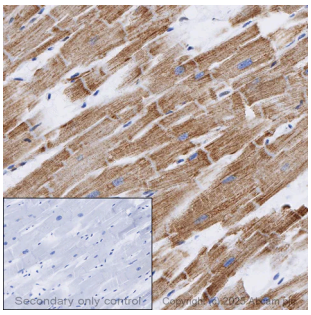



## Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

ATPB Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-ATPB antibody

ab14730 (2µg/ml) staining ATPB in human duodenum using an automated system (DAKO Autostainer Plus). Using this protocol there is cytoplasmic and mitochondrial staining of epithelium.
Sections were rehydrated and antigen retrieved with the Dako 3 in 1 AR buffer EDTA pH 9.0 in a DAKO PT link. Slides were peroxidase blocked in 3% H2O2 in methanol for 10 mins. They were then blocked with Dako Protein block for 10 minutes (containing casein 0.25% in PBS) then incubated with primary antibody for 20 min and detected with Dako Envision Flex amplification kit for 30 minutes. Colorimetric detection was completed with Diaminobenzidine for 5 minutes. Slides were counterstained with Haematoxylin and coverslipped under DePeX. Please note that, for manual staining, optimization of primary antibody concentration and incubation time is recommended. Signal amplification may be required.

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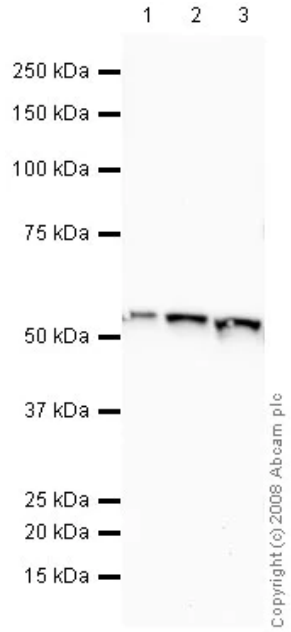



## Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

ATPB Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human muscle using mouse Anti-ATPB antibody

Immunohistochemical analysis of formalin fixed paraffin embedded human muscle labelling ATPB with ab14730 at a concentration of 0.1µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with a OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was performed with DISCOVERY cell conditioning solution (CC1) 100°C, pH8.5 for 32mins. ab14730 anti-ATPB antibody [3D5] was incubated for 16mins at 37°C. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.
Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual).

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## Western blot - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

All lanes:
Western blot - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730) at 0.8 µg/mL

Lane 1:
HeLa (Human epithelial carcinoma cell line) Whole Cell Lysate at 10 µg

Lane 2:
HepG2 (Human hepatocellular liver carcinoma cell line) Whole Cell Lysate at 10 µg

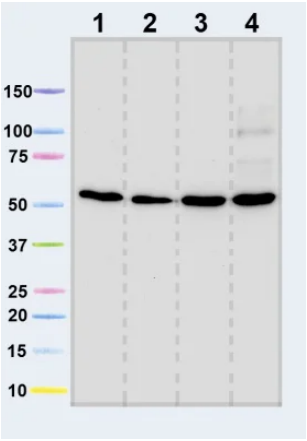
Lane 3:
Human liver tissue lysate - total protein (ab29889) at 10 µg

Secondary

All lanes:
Goat polyclonal to Mouse IgG - H&L - Pre-Adsorbed (HRP) at 1/3000 dilution

Predicted band size: 56 kDa

Observed band size: 52 kDa




## Western blot - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

All lanes:
Western blot - Anti-ATPB antibody [3D5] - Mitochondrial Marker (ab14730)

Lane 1:
isolated mitochondria from human heart at 5 µg

Lane 2:
isolated mitochondria from bovine heart at 1 µg

Lane 3:
isolated mitochondria from rat heart at 10 µg

Lane 4:
isolated mitochondria from mouse heart at 10 µg

Predicted band size: 56 kDa

Observed band size: 52 kDa

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