abcam

ab251408

Anti-MTCO1 antibody [EPR19642] - BSA and Azide free

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR19642
Purification technique	Affinity purification Protein A

Reactivity data

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-
Notes	-

Target data

See full target information MT-CO1

Function

Component of the cytochrome c oxidase, the last enzyme in the mitochondrial electron transport chain which drives oxidative phosphorylation. The respiratory chain contains 3 multisubunit complexes succinate dehydrogenase (complex II, CII), ubiquinol-cytochrome c oxidoreductase (cytochrome b-c1 complex, complex III, CIII) and cytochrome c oxidase (complex IV, CIV), that cooperate to transfer electrons derived from NADH and succinate to molecular oxygen, creating an electrochemical gradient over the inner membrane that drives transmembrane transport and the ATP synthase. Cytochrome c oxidase is the component of the respiratory chain that catalyzes the reduction of oxygen to water. Electrons originating from reduced cytochrome c in the intermembrane space (IMS) are transferred via the dinuclear copper A center (CU(A)) of subunit 2 and heme A of subunit 1 to the active site in subunit 1, a binuclear center (BNC) formed by heme A3 and copper B (CU(B)). The BNC reduces molecular oxygen to 2 water molecules using 4 electrons from cytochrome c in the IMS and 4 protons from the mitochondrial matrix.

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

ab251408 is the carrier-free version of ab203917.

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.

Conjugation ready

Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility

This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

Supplementary info

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

Activity summary	MTCO1 also known as COX1 or MT-CO1 is an important component of the mitochondrial respiratory chain's complex IV commonly called cytochrome c oxidase. This target is encoded by mitochondrial DNA and contributes to the complex's catalytic core. It is a transmembrane protein with a noted molecular

	weight of approximately 57 kDa. MTCO1 is predominantly expressed in tissues with high energy demand such as cardiac and skeletal muscles due to their reliance on efficient oxidative phosphorylation.
Biological function summary	MTCO1 is vital for the final step of the electron transport chain catalyzing the transfer of electrons from cytochrome c to oxygen. This process facilitates the reduction of oxygen molecules to water. MTCO1 is an integral part of cytochrome c oxidase a multi-subunit enzyme complex important for cellular energy production. Proper function of MTCO1 supports ATP synthesis by maintaining electrochemical gradients across the mitochondrial inner membrane.
Pathways	Electrons transfer through this protein is essential for effective oxidative phosphorylation and maintaining the proton gradient necessary for ATP synthesis. MTCO1 operates in tandem with proteins like COX2 within the electron transport chain to achieve optimal energy conversion and cellular respiration. The pathway interactions of MTCO1 are critical in efficiently powering cellular activities and upholding metabolic functions throughout the body.
Associated diseases and disorders	Mutations or defects in MTCO1 have associations with various mitochondrial diseases such as Leber's Hereditary Optic Neuropathy (LHON) and mitochondrial complex IV deficiency. MTCO1 anomalies may disrupt normal function leading to impaired oxidative phosphorylation and energy deficits in cells. In LHON affected individuals can also demonstrate deficits linked to mutations in other mitochondrial genes like ND1 which further disrupt cellular energy balance and contribute to the clinical manifestations of these mitochondrial disorders.

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

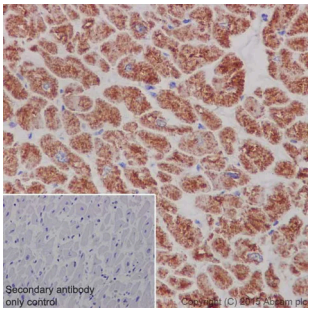
We do not recommend this combination. It is not covered by our product promise.

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



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTCO1 antibody [EPR19642] - BSA and Azide free (ab251408)

MTCO1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MTCO1 antibody

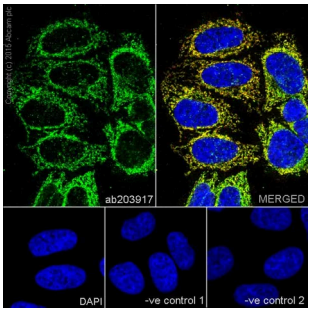
This data was developed using ab203917, the same antibody clone in a different buffer formulation.
Immunohistochemical analysis of paraffin-embedded Human cardiac muscle tissue labeling MTCO1 with ab203917 at 1/250 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

Cytoplasm staining on Human cardiac muscle is observed.

Counter stained with Hematoxylin.

Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is ab97051 at 1/500 dilution.

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-MTCO1 antibody [EPR19642] - BSA and Azide free (ab251408)

MTCO1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-MTCO1 antibody

This data was developed using ab203917, the same antibody clone in a different buffer formulation.

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HeLa (Human epithelial cell line from cervix adenocarcinoma) cells labeling MTCO1 with ab203917 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green).

Confocal image showing cytoplasmic staining on HeLa cell line.

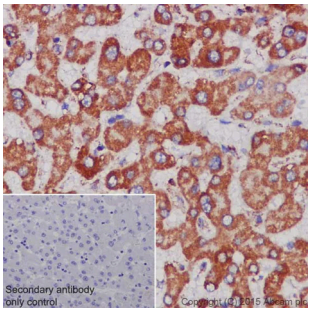
The nuclear counterstain is DAPI (blue).

COX IV is detected with ab33985 (anti-COX IV mouse mAb) at 1/1000 dilution and Goat Anti-Mouse IgG H&L (Alexa Fluor® 594) preadsorbed (ab150120) at 1/1000 dilution (red).

The negative controls are as follows:-

-ve control 1: ab203917 at 1/1000 dilution followed by ab150120 at 1/1000 dilution.

-ve control 2: ab33985 at 1/1000 dilution followed by ab150077 at 1/1000 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTCO1 antibody [EPR19642] - BSA and Azide free (ab251408)

MTCO1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using rabbit Anti-MTCO1 antibody

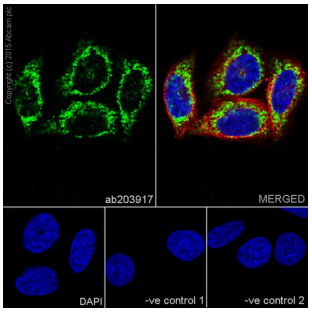
This data was developed using ab203917, the same antibody clone in a different buffer formulation.
Immunohistochemical analysis of paraffin-embedded Human liver tissue labeling MTCO1 with ab203917 at 1/250 dilution, followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

Cytoplasm staining on hepatocytes of Human liver is observed.

Counter stained with Hematoxylin.

Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is ab97051 at 1/500 dilution.

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-MTCO1 antibody [EPR19642] - BSA and Azide free (ab251408)

MTCO1 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-MTCO1 antibody

This data was developed using ab203917, the same antibody clone in a different buffer formulation.

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HeLa (Human epithelial cell line from cervix adenocarcinoma) cells labeling MTCO1 with ab203917 at 1/1000 dilution, followed by Goat Anti-Rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green).

Confocal image showing cytoplasmic staining on HeLa cell line.

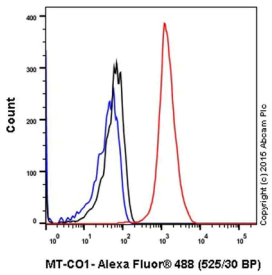
The nuclear counterstain is DAPI (blue).

Tubulin is detected with Anti-alpha Tubulin antibody [DM1A] - Loading Control (ab7291) at 1/1000 dilution and Goat Anti-Mouse IgG H&L (Alexa Fluor® 594) preadsorbed (ab150120) at 1/1000 dilution (red).

The negative controls are as follows:-

-ve control 1: ab203917 at 1/1000 dilution followed by ab150120 at 1/1000 dilution.

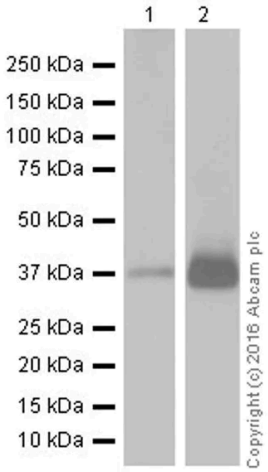
-ve control 2: ab7291 at 1/1000 dilution followed by ab150077 at 1/1000 dilution.



Flow Cytometry (Intracellular) - Anti-MTCO1 antibody [EPR19642] - BSA and Azide free (ab251408)

MTCO1 Flow Cytometry (Intracellular) staining using rabbit Anti-MTCO1 antibody

This data was developed using ab203917, the same antibody clone in a different buffer formulation.
Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed HeLa (Human epithelial cell line from cervix adenocarcinoma) cells labeling MTCO1 with ab203917 at 1/700 dilution (red) compared with a Rabbit IgG,monoclonal [EPR25A] - Isotype Control (ab172730) (black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (blue). Goat anti Rabbit IgG (Alexa Fluor® 488) at 1/500 dilution was used as the secondary antibody.



Western blot - Anti-MTCO1 antibody [EPR19642] - BSA and Azide free (ab251408)

MTCO1 Western blot staining using rabbit Anti-MTCO1 antibody

This data was developed using ab203917, the same antibody clone in a different buffer formulation.
Blocking and dilution buffer: 5% NFDM/TBST.

Exposure times: Lane 1: 5 seconds; Lane 2: 1 second.

All lanes:
Western blot - Anti-MTCO1 antibody [EPR19642] (ab203917) at 1/1000 dilution

Lane 1:
HeLa (Human epithelial cell line from cervix adenocarcinoma) whole cell lysate at 20 µg

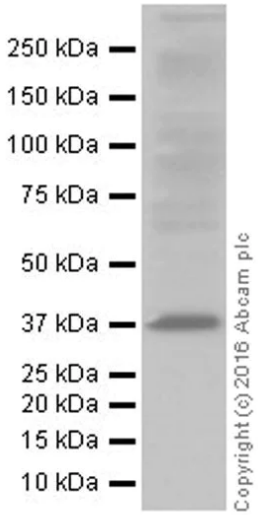
Lane 2:
HeLa (Human epithelial cell line from cervix adenocarcinoma) mitochondria lysate at 20 µg

Secondary

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

Predicted band size: 57 kDa

Observed band size: 37 kDa



Western blot - Anti-MTCO1 antibody [EPR19642] - BSA and Azide free (ab251408)

This data was developed using ab203917, the same antibody clone in a different buffer formulation.
Blocking and dilution buffer: 5% NFDM/TBST.

All lanes:
Western blot - Anti-MTCO1 antibody [EPR19642] (ab203917) at 1/1000 dilution

All lanes:
Human fetal liver lysate at 10 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG Peroxidase Conjugate, specific to the non-reduced form of IgG at 1/10000 dilution

Predicted band size: 57 kDa

Observed band size: 37 kDa, 45 kDa

Exposure time: 15s

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