

Anti-MTCO1 antibody [1D6E1A8]

Anti-MTCO1 antibody [1D6E1A8] (ab14705) is a mouse monoclonal antibody detecting MTCO1 in **Western Blot, Flow Cytometry, IHC-P**. Suitable for **Human, Mouse, Rat**.

- Over 520 publications
- Trusted since 2004

Recombinant

Key facts

Isotype	IgG2a
Host species	Mouse
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	1D6E1A8
Purification technique	Affinity purification Protein A
Light chain type	kappa
Concentration	0.992 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

ICC

Tested

Species	Human
Dilution info	1/100
Notes	-

Species	Mouse
Dilution info	1/100
Notes	-

Species	Rat
Dilution info	1/100
Notes	-

Predicted

Species	Goat, Pig, Caenorhabditis elegans, Zebrafish, Quail, Rhesus monkey, Chinese hamster, Common marmoset, Sheep, Cat, Dog
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1/500
Notes	-

Species	Mouse
Dilution info	1/500
Notes	-

Species	Rat
Dilution info	1/500
Notes	-

Predicted

Species	Goat, Pig, Caenorhabditis elegans, Zebrafish, Quail, Rhesus monkey, Chinese hamster, Common marmoset, Sheep, Cat, Dog
Dilution info	-
Notes	-

WB

Tested	
Species	Human
Dilution info	1/1000
Notes	-
Species	Mouse
Dilution info	1/1000
Notes	-
Species	Rat
Dilution info	1/1000
Notes	-

Predicted

Species	Goat, Pig, Caenorhabditis elegans, Zebrafish, Quail, Rhesus monkey, Chinese hamster, Common marmoset, Sheep, Cat, Dog
Dilution info	-
Notes	-

IHC-P

Tested	
Species	Human
Dilution info	1/5000
Notes	-
Species	Mouse

Dilution info	1/5000
Notes	-

Species	Rat
Dilution info	1/5000
Notes	-

Predicted

Species	Goat, Pig, Caenorhabditis elegans, Zebrafish, Quail, Rhesus monkey, Chinese hamster, Common marmoset, Sheep, Cat, Dog
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.
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Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C

Notes

Anti-MTCO1 antibody [1D6E1A8] (ab14705) is a House Mouse recombinant monoclonal antibody and is validated for use in Flow Cyt, ICC, IHC-P, WB in human, recombinant fragment samples.

Anti-MTCO1 antibody [1D6E1A8] (ab14705) has been cited over 521 times in peer reviewed journals and is trusted by the scientific community.

Abcams high quality manufacturing and validation processes ensure Anti-MTCO1 antibody [1D6E1A8] (ab14705) has high sensitivity and specificity alongside high lot-to-lot consistency and reproducibility.

Anti-MTCO1 antibody [1D6E1A8] (ab14705) has 40 independent reviews from customers.

Anti-MTCO1 antibody [1D6E1A8] (ab14705) specifically detects MTCO1 (UniProt ID: P00395; Molecular weight: 57kDa) and is sold in 100 ug and 1 mg selling sizes.

Antibody clone 1D6E1A8 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 488, Alexa Fluor® 647 (ab154477, ab1986).

This product has switched from a hybridoma to recombinant production method on 24th May 2023.

Western blot protocol advice:

For best results with this antibody in Western blot, do not boil samples before loading onto the gel. Boiling of the sample will cause a loss of signal.

Hydrophobic intrinsic membrane proteins such as the core mtDNA-encoded proteins of the mitochondrial OXPHOS complexes tend to run faster in SDS-PAGE than predicted by their amino acid composition. This is likely due to incomplete unfolding of the protein and a more negative charge:mass ratio.

This antibody clone [1D6E1A8] is manufactured by Abcam. If you require a different buffer formulation or a particular conjugate for your experiments, please contact orders@abcam.com.

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

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

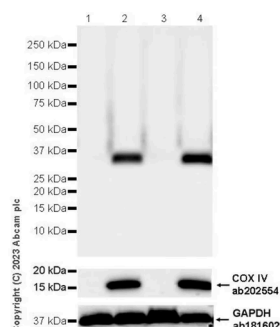
We do not recommend this combination. It is not covered by our product promise.

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.](#)

12 product images



Western blot - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Western blot staining using mouse Anti-MTCO1 antibody

Blocking and diluting buffer: 5% NFDm/TBST.

In Western blot, anti-GAPDH antibody ([ab181602](#)) loading control staining at 1/200000 dilution. Anti-COX IV antibody [EPR9442(ABC)] - Mitochondrial Loading Control ([ab202554](#)) staining at 1/1000 dilution.

Samples are non-boiled as boiling may cause protein aggregation.

All lanes:

Western blot - Anti-MTCO1 antibody [1D6E1A8] (ab14705) at 1/1000 dilution

Lane 1:

HeLa (human cervical adenocarcinoma epithelial cell) non-mitochondrial fraction at 20 µg

Lane 2:

HeLa mitochondrial fraction at 20 µg

Lane 3:

MCF7 (human breast adenocarcinoma epithelial cell) non-mitochondrial fraction at 20 µg

Lane 4:

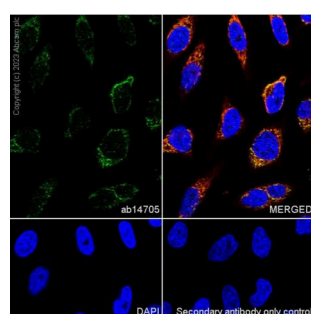
MCF7 mitochondrial fraction at 20 µg

Secondary

All lanes:

Peroxidase-Conjugated Goat anti-Mouse IgG (H+L) at 1/10000 dilution

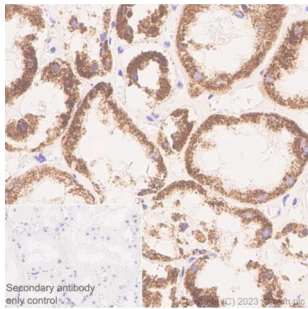
Observed band size: 35 kDa



Immunocytochemistry/ Immunofluorescence - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Immunocytochemistry/ Immunofluorescence staining of Human cervical adenocarcinoma epithelial cells using mouse Anti-MTCO1 antibody

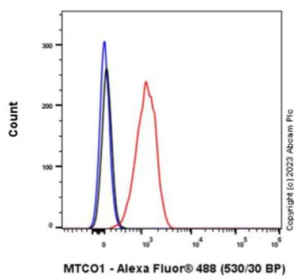
Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized Human cervical adenocarcinoma epithelial cells labeling MTCO1 with ab14705 at 1/100 dilution, followed by [ab150113](#) Goat Anti-Mouse IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 dilution. Confocal image showing cytoplasmic and membranous staining in subsets of Human cervical adenocarcinoma epithelial cells. [ab186735](#) Anti-TOMM20 antibody [EPR15581-54] - Mitochondrial Marker was used to counterstain tubulin at 1/400 dilution. The Nuclear counterstain was DAPI (Blue). Secondary antibody only control: Secondary antibody is [ab150080](#) Goat Anti-Rabbit IgG H&L (Alexa Fluor® 594) preadsorbed at 1/1000 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Human kidney tissue using mouse Anti-MTCO1 antibody

Immunohistochemical analysis of paraffin-embedded Human kidney tissue labelling MTCO1 with ab14705 at 1/5000 dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on Human kidney. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0, epitope retrieval Solution2) for 20 mins. Counterstained with hematoxylin.



Flow Cytometry - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Flow Cytometry staining using mouse Anti-MTCO1 antibody

Flow cytometric analysis of Human HeLa cells labelling MTCO1 with ab14705 at 1/500 dilution (Right) compared with an isotype control (Left). Goat Anti-Rabbit IgG (Alexa Fluor® 488, [ab150081](#)) at was used as the secondary antibody. Gated on viable cells.

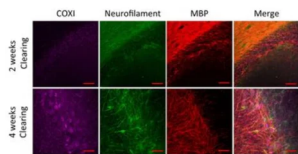


Image from Phillips J et al., Sci Rep. 2016 May 16;6:26013. Fig 3b doi: 10.1038/srep26013. Reproduced under the Creative Commons license <http://creativecommons.org/licenses/by/4.0/>.

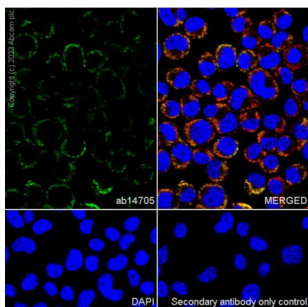
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

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

This image was generated using a previous batch manufactured using hybridoma production method.

250 µm human cerebellar sections from control individuals and a patient with mitochondrial disease underwent passive clearing at 37 °C for 2 or 4 weeks.

The quality of immunofluorescent staining is determined by duration of passive clearing; 2 weeks of passive clearing produced minimal labelling of the white matter in the granule cell layer (NF-H; green; 488 nm and MBP; red, 546 nm) with an absence of labelling of mitochondria (MTCO1 (COXI) (ab14705, 1/100); purple; 647 nm; Extending passive clearing to 4 weeks improved the quality of stain with identifiable Purkinje cells and their axons (NF-H, green; 488 nm) and their myelin sheaths (MBP; red, 546 nm) and mitochondria (MTCO1 (COXI) (ab14705, 1/100); purple; 647 nm.

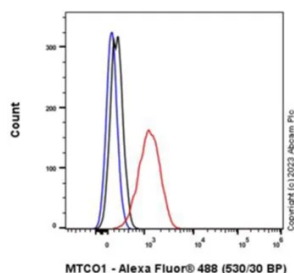


Immunocytochemistry/ Immunofluorescence - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Immunocytochemistry/ Immunofluorescence staining of Mouse neuroblastoma neuroblast cells using mouse Anti-MTCO1 antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized Mouse neuroblastoma neuroblast cells labeling MTCO1 with ab14705 at 1/100 dilution, followed by [ab150113](#) Goat Anti-Mouse IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 dilution. Confocal image showing cytoplasmic and membranous staining in subsets of Mouse neuroblastoma neuroblast cells. [ab186735](#) Anti-TOMM20 antibody [EPR15581-54] - Mitochondrial Marker was used to counterstain tubulin at 1/400 dilution. The Nuclear counterstain was DAPI

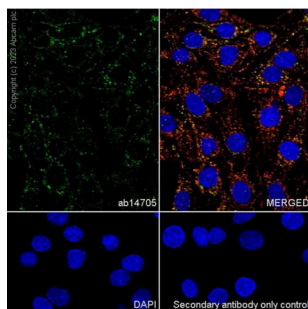
(Blue). Secondary antibody only control: Secondary antibody is [ab150080](#) Goat Anti-Rabbit IgG H&L (Alexa Fluor® 594) preadsorbed at 1/1000 dilution.



Flow Cytometry - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Flow Cytometry staining using mouse Anti-MTCO1 antibody

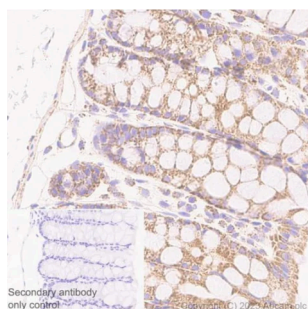
Flow cytometric analysis of Neuro-2a cells labelling MTCO1 with ab14705 at 1/500 dilution (Right) compared with an isotype control (Left). Goat Anti-Rabbit IgG (Alexa Fluor® 488, [ab150081](#)) at was used as the secondary antibody. Gated on viable cells.



Immunocytochemistry/ Immunofluorescence - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Immunocytochemistry/ Immunofluorescence staining of Rat glial tumor cells using mouse Anti-MTCO1 antibody

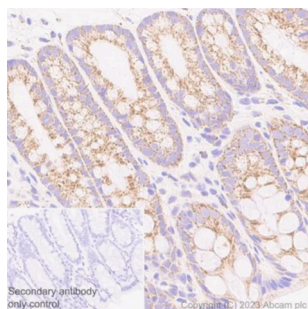
Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized Rat glial tumor cells labeling MTCO1 with ab14705 at 1/100 dilution, followed by [ab150113](#) Goat Anti-Mouse IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 dilution. Confocal image showing cytoplasmic and membranous staining in subsets of Rat glial tumor cells. [ab186735](#) Anti-TOMM20 antibody [EPR15581-54] - Mitochondrial Marker was used to counterstain tubulin at 1/400 dilution. The Nuclear counterstain was DAPI (Blue). Secondary antibody only control: Secondary antibody is [ab150080](#) Goat Anti-Rabbit IgG H&L (Alexa Fluor® 594) preadsorbed at 1/1000 dilution.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Mouse colon tissue using mouse Anti-MTCO1 antibody

Immunohistochemical analysis of paraffin-embedded Mouse colon tissue labelling MTCO1 with ab14705 at 1/5000 dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on Mouse colon. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Heat mediated antigen retrieval was performed with Citrate buffer (pH 6.0, epitope retrieval Solution2) for 20 mins. Counterstained with hematoxylin.

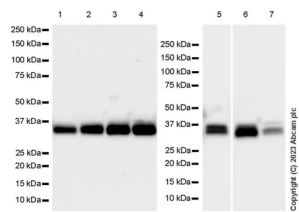


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining of Rat colon tissue using mouse Anti-MTCO1 antibody

Immunohistochemical analysis of paraffin-embedded Rat colon tissue labelling MTCO1 with ab14705 at 1/5000 dilution, followed by a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Positive staining on Rat colon. The immunostaining was performed on a Leica Biosystems BOND® RX instrument. Secondary antibody only control: Secondary antibody is a ready to use LeicaDS9800 (Bond™ Polymer Refine Detection). Heat mediated antigen retrieval was

performed with Citrate buffer (pH 6.0, epitope retrieval Solution2) for 20 mins. Counterstained with hematoxylin.



Western blot - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Western blot staining using mouse Anti-MTCO1 antibody

Blocking and diluting buffer: 5% NFDm/TBST.

Samples are non-boiled as boiling may cause protein aggregation.

All lanes:

Western blot - Anti-MTCO1 antibody [1D6E1A8] (ab14705) at 1/1000 dilution

Lane 1:

C6 (rat glial tumor glial cell) whole cell lysate at 20 µg

Lane 2:

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

Lane 3:

Neuro-2a (mouse neuroblastoma neuroblast) whole cell lysate at 20 µg

Lane 4:

RAW 264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) whole cell lysate at 20 µg

Lane 5:

Human skeletal muscle tissue lysate at 20 µg

Lane 6:

Rat heart tissue lysate at 20 µg

Lane 7:

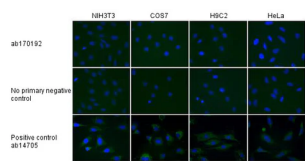
Rat liver tissue lysate at 20 µg

Secondary

All lanes:

Peroxidase-Conjugated Goat anti-Mouse IgG (H+L) at 1/10000 dilution

Observed band size: 35 kDa



Immunocytochemistry/ Immunofluorescence - Anti-MTCO1 antibody [1D6E1A8] (ab14705)

MTCO1 Immunocytochemistry/ Immunofluorescence staining of Positive Control using mouse Anti-MTCO1 antibody

Immunofluorescent analysis of NIH 3T3, COS7, H9C2 and HeLa cells using [ab170192](#) at 1µg/ml (top); no primary antibody negative control (middle), and ab14705 as a positive control (bottom). An Alexa Fluor® 488 conjugate with isotype specificity to the mouse antibody was used as a secondary antibody. The isotype control at 1 ug/mL shows no higher signal than the no primary negative control.

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