abcam

ab110325

Anti-Cytochrome C antibody [37BA11]

Anti-Cytochrome C antibody [37BA11] (ab110325) is a mouse monoclonal antibody detecting Cytochrome C in **Western Blot, Flow Cytometry, ICC/IF**. Suitable for **Caenorhabditis elegans, Cow, Human, Mouse, Rat**.

- Over 130 publications

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	pH: 7.4 - 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	37BA11
Purification technique	Affinity purification Protein G
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	ab110325 was produced in vitro using hybridomas grown in serum-free medium, and then purified by Protein G purification via FPLC and the pure IgG fraction is eluted.

Reactivity data

Flow Cyt

Tested

Species	Human
Dilution info	1 µg/mL
Notes	ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Expected

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

Predicted

Species	Caenorhabditis elegans
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	0.25-1 µg/mL
Notes	-

Species	Cow
Dilution info	0.25-1 µg/mL
Notes	-

Species	Mouse
Dilution info	0.25-1 µg/mL
Notes	-

Species	Rat
Dilution info	0.25-1 µg/mL
Notes	-

Expected

Species	Caenorhabditis elegans
Dilution info	0.25-1 µg/mL
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	0.5-2 µg/mL
Notes	Heat induced antigen retrieval in 0.1 M Tris-HCl, 5% urea, pH 9.5 for 5 min at 95°C improves signal.

Expected

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

Predicted

Species	Caenorhabditis elegans
Dilution info	-
Notes	-

Target data

See full target information CYCS

Function Electron carrier protein. The oxidized form of the cytochrome c heme group can accept an electron from the heme group of the cytochrome c1 subunit of cytochrome reductase. Cytochrome c then transfers this electron to the cytochrome oxidase complex, the final protein carrier in the mitochondrial electron-transport chain. Plays a role in apoptosis. Suppression of the anti-apoptotic members or activation of the pro-apoptotic members of the Bcl-2 family leads to altered mitochondrial membrane permeability resulting in release of cytochrome c into the cytosol. Binding of cytochrome c to Apaf-1 triggers the

activation of caspase-9, which then accelerates apoptosis by activating other caspases.

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot

Notes

What is this antibody validated in?
Anti-Cytochrome C antibody [37BA11] (ab110325) is a mouse monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Flow Cyt), Immunocytochemistry/immunofluorescence (ICC/IF) in Caenorhabditis elegans, Cow, Human, Mouse, Rat samples.

What is the molecular weight of Cytochrome C?
Anti-Cytochrome C [37BA11] (ab110325) specifically detects a band for Cytochrome C (UniProt: P99999) at a molecular weight of 12kDa.

Trusted by the scientific community
Anti-Cytochrome C [37BA11] (ab110325) was first used in a scientific publication in 2011 and has been cited over 130 times in peer-reviewed journals.

Other related products
We have a range of other formats of antibody clone [37BA11] also available for your convenience: ab110325, Alexa Fluor® 488 - ab154476, HRP - ab198489, Alexa Fluor® 647 - ab198583

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	Cytochrome C also referred to as "cytochrome c" or "Cyt C" is a small protein with a molecular weight of approximately 12 kDa. It is a component of the electron transport chain playing an essential mechanical role in cellular respiration. Cytochrome C is expressed in the mitochondria of eukaryotic cells where it

	functions as a heme protein. The mass of this protein allows efficient electron transfer between Complex III (cytochrome bc1 complex) and Complex IV (cytochrome c oxidase) contributing to ATP synthesis.
Biological function summary	Cytochrome c contributes to the process of oxidative phosphorylation within mitochondria. It is not only an important electron carrier but it also plays a significant role in apoptosis. In the event of cellular stress cytochrome c releases into the cytosol and forms part of the apoptosome complex. This apoptosome activation leads to the caspase cascade driving programmed cell death. Therefore cytochrome C serves as both a mediator of energy production and a regulator of apoptosis.
Pathways	Cytochrome c is integral to the mitochondrial electron transport chain and apoptotic pathways. It interacts with proteins in these pathways such as cytochrome c oxidase in oxidative phosphorylation and Apaf-1 during apoptosis. The electron transport chain's function is dependent on the efficient transfer of electrons facilitated by cytochrome c ensuring ATP production in cellular respiration.
Associated diseases and disorders	Cytochrome c links to conditions like cancer and neurodegenerative diseases. In cancer its role in the apoptotic pathway often emerges as cancer cells can develop mechanisms to evade apoptosis impacting cytochrome c release. For neurodegenerative diseases disruptions in mitochondrial function and cytochrome c's release can facilitate cell death implicating its role in conditions like Parkinson's disease. The interaction of cytochrome c with proteins such as p53 in response to cellular stress further highlights its involvement in disease pathogenesis.

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

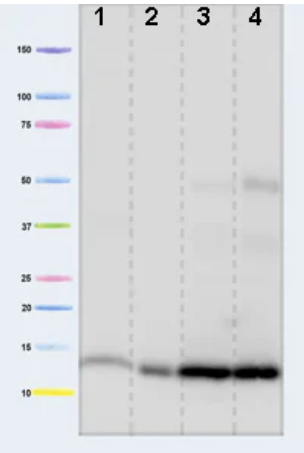
We do not recommend this combination. It is not covered by our product promise.

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.

8 product images



Western blot - Anti-Cytochrome C antibody [37BA11] (ab110325)

Cytochrome C Western blot staining using mouse Anti-Cytochrome C antibody

All lanes:
Western blot - Anti-Cytochrome C antibody [37BA11] (ab110325) at 1 µg/mL

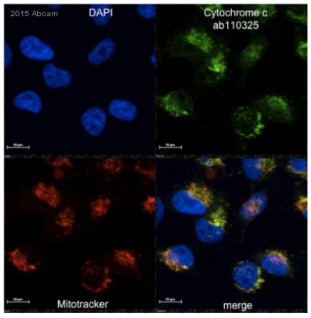
Lane 1:
Isolated mitochondria from Human heart at 5 µg

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: 11 kDa

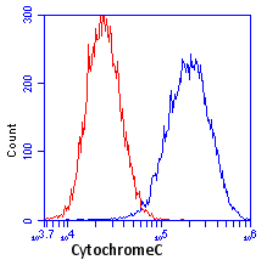


This image is courtesy of an anonymous customer review

Immunocytochemistry/ Immunofluorescence - Anti-Cytochrome C antibody [37BA11] (ab110325)

Cytochrome C Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Cytochrome C antibody

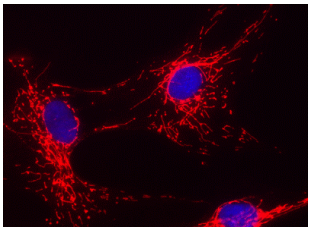
ab110325 staining Cytochrome C in MDA MB 231 cells by ICC/IF (Immunocytochemistry/immunofluorescence). Cells were fixed with formaldehyde, permeabilized with 1% Triton X-100 and blocked with 10% BSA for 1 hour at 21°C. Samples were incubated with primary antibody (1/100) for 1 hour. An undiluted DyLight® 550-conjugated goat anti-mouse IgG polyclonal was used as the secondary antibody.



Flow Cytometry - Anti-Cytochrome C antibody [37BA11] (ab110325)

Cytochrome C Flow Cytometry staining using mouse Anti-Cytochrome C antibody

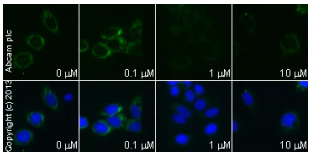
Flow cytometric analysis using ab110325 at 1µg/ml staining Cytochrome C in HeLa cells (blue). Isotype control antibody (red).



Immunocytochemistry/ Immunofluorescence - Anti-Cytochrome C antibody [37BA11] (ab110325)

Cytochrome C Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Cytochrome C antibody

Immunocytochemistry analysis using ab110325 at 2µg/ml staining Cytochrome C in Human fibroblasts (fixed and permeabilized), followed by a fluorescent goat-anti-mouse IgG.



Immunocytochemistry/ Immunofluorescence - Anti-Cytochrome C antibody [37BA11] (ab110325)

Cytochrome C Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Cytochrome C antibody

ab110325 staining cytochrome C in MCF7 cells treated with 15-Deoxy-delta12,14-prostaglandin J2 (ab141717), by ICC/IF. Expression of cytochrome C changes from mitochondrial puncta to a difuse staining pattern with increased concentration of 15-Deoxy-delta12,14-prostaglandin J2, as described in literature.
The cells were incubated at 37°C for 24 hours in media containing different concentrations of ab141717 (15-Deoxy-delta12,14-prostaglandin J2) in DMSO, fixed with 100% methanol for 5 minutes at -20°C and blocked with PBS containing 10% goat serum, 0.3 M glycine, 1% BSA and 0.1% tween for 2h at room temperature. Staining of the treated cells with ab110325 (10 µg/ml) was performed overnight at 4°C in PBS containing 1% BSA and 0.1% tween. A DyLight 488 anti-mouse polyclonal antibody (ab96879) at 1/250 dilution was used as the secondary antibody. Nuclei (blue) were counterstained with DAPI and membrane is was stained using WGA (red).

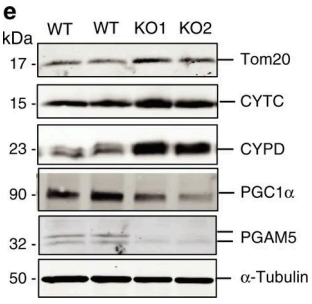


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Western blot - Anti-Cytochrome C antibody [37BA11] (ab110325)

Cytochrome C Western blot staining using mouse Anti-Cytochrome C antibody

Western Blotting using Anti-Cytochrome C antibody [37BA11], ab110325. Publication image from Yu, B. et al., 2020, Nat Commun, 32439975. Legend direct from paper.

Mitochondrial dynamics and function change upon PGAM5 deletion.a Mitochondrial morphology outlined by Tom20 antibodies in control and PGAM5−/− ARPE-19 cells. Scale bar = 20 µm. n = 5. b Western blots showing upregulation of phosphor-Drp1(S637) but not total Drp1 in PGAM5−/− ARPE-19 cells.α-Tubulin was used as loading control. n = 4. c Western blots showing PGAM5 cleavage and Drp1(S637) dephosphorylation in ARPE-19 cells by CCCP treatment. n = 3. d Co-immunoprecipitation experiment using Axin1 antibody, showing that Axin1 interacts with both Drp1 and cleaved PGAM5 in ARPE-19 cells. n = 3. e Western blots showing upregulation of mitochondrial proteins (Tom20, CYTC, CYPD) and downregulation of PGC1α in PGAM5−/− ARPE-19 cells.α-Tubulin was used as loading control. n = 4. f Increased mitochondrial DNA in PGAM5−/− ARPE-19 cells. n = 5. *p = 0.0111, two-tailed unpaired t-tests; error bars, mean ± s.e.m. g Increased mitochondrial protein Cypd in the RPE/choroid of Pgam5−/− mice.α-Tubulin was used as loading control. n = 3. h Decreased mitochondrial turnover in PGAM5−/− ARPE-19 by MitoTimer transfection and labeling. Scale Bar equals to 20 µm. n = 3. i Mitochondrial membrane potential change as labeled by JC-1 in WT and PGAM5−/− ARPE-19 cells. Scale bar = 20 µm. n = 5. j ATP level change as measured in short-term (1 week) and long-term (8 weeks) culture of WT and PGAM5−/− ARPE-19 cells. n = 3, ****p < 0.0001, two-way ANOVA Tukey’ s multiple comparisons test; error bars, mean ± s.e.m. k ROS change as measured in short-term (1 week) and long-term (8 weeks) culture of WT and PGAM5−/− ARPE-19 cells. n = 3, *p < 0.05; ****p < 0.0001, two-way ANOVA Tukey’ s multiple comparisons test. n.s. represents no significance. Error bars, mean ± s.e.m.; for assays in the figure, n represents the number of biologically independent experiments. Images were captured under same settings, and representative images were shown. Source data are available as a Source Data file.

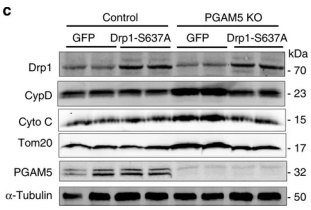


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Western blot - Anti-Cytochrome C antibody [37BA11] (ab110325)

Cytochrome C Western blot staining using mouse Anti-Cytochrome C antibody

Western Blotting using Anti-Cytochrome C antibody [37BA11], ab110325. Publication image from Yu, B. et al., 2020, Nat Commun, 32439975. Legend direct from paper.

Rescue of PGAM5−/− accelerated senescence phenotype by Drp-S637A overexpression.a Mitochondrial morphology outlined by Tom20 antibodies in WT and PGAM5−/− ARPE-19 cells overexpressing GFP or DRP1 S637A, respectively. Scale bar = 20 μm. n = 5. b Quantification of mitochondrial branch in a. n = 5, ***p = 0.0007, ****p < 0.0001, n.s. no significant. two-way ANOVA Tukey’ s multiple comparisons test. Error bars, mean ± s.d. c Upregulation of mitochondrial proteins (Tom20, CYTC, CYPD) were rescued by Drp1 S637A overexpression in PGAM5−/− ARPE-19 cells.α-Tubulin was used as loading control. n = 4. d Expression of phosphor-AMPK, phosphor-TSC2, total-TSC2, phosphor-S6, total S6 and Drp1 in WT and PGAM5−/− ARPE-19 cells transduced with GFP or Drp1 S637A expressing lentivirus. β-Actin was used as loading control. n = 4. e ATP level in short-term (1 week) culture of WT and PGAM5−/− ARPE-19 cells transduced with GFP or Drp1 S637A expressing lentivirus. n = 9 biologically independent samples. ***p = 0.0005, ****p < 0.0001, two-way ANOVA Tukey’ s multiple comparisons test. Error bars, mean ± s.d. f ATP level in long-term (8 week) culture of WT and PGAM5−/− ARPE-19 cells transduced with GFP or Drp1 S637A expressing lentivirus. n = 9 biologically independent samples. ****p < 0.0001, two-way ANOVA Tukey’ s multiple comparisons test. Error bars, mean ± s.d. g Partial rescue of senescence phenotype in PGAM5−/− ARPE-19 cells by Drp1 S637A overexpression as shown by SA-β-Gal assay. Scale bar = 100 μm. n = 4. h Quantification β-gal-positive cells in g. n = 4. ****p < 0.0001, two-way ANOVA Tukey’ s multiple comparisons test. Error bars, mean ± s.d. For assays in the figure, n represents the number of biologically independent experiments unless otherwise specified. Images were captured under same settings, and representative images were shown. Source data are available as a Source Data file.

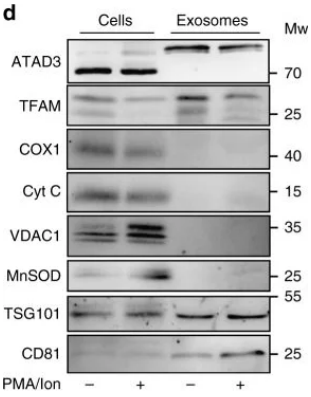


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Western blot - Anti-Cytochrome C antibody [37BA11] (ab110325)

Cytochrome C Western blot staining using mouse Anti-Cytochrome C antibody

Western Blotting using Anti-Cytochrome C antibody [37BA11], ab110325. Publication image from Torralba, D. et al., 2018, Nat Commun, 29985392. Legend direct from paper.

Exosomes shuttle mitochondrial proteins. a Differential ultracentrifugation protocol for isolating and purifying exosomes from cell culture supernatants. b Size distribution analysis by Nanoparticle Tracking Analysis (NTA) of purified EVs from primary human T lymphoblasts. c Gene ontology (GO) cellular component analysis of peptides identified in T cell EVs. d Western blot analysis of mitochondrial proteins in EVs obtained from the culture supernatant of primary human T lymphoblasts with or without treatment with phorbol myristate acetate (PMA) plus ionomycin. Cells and EVs were blotted for proteins associated with mtDNA (TFAM and ATAD3), for proteins located in the inner mitochondrial membrane (COX1 and Cytochrome C), the outer mitochondrial membrane (VDAC1), the mitochondrial matrix (mitochondrial manganese superoxide dismutase, MnSOD), and for the exosome markers TSG101 and CD81. e Western blot analysis of ATAD3, TFAM, and the exosome markers CD81 and TSG101 in sucrose fractions. EVs obtained from the culture supernatant of human T lymphoblasts were laid on a discontinuous sucrose gradient and floated by overnight centrifugation. Gradient fractions were collected and analyzed by immunoblot to reveal the distribution of mtDNA-binding proteins and exosomal proteins in the sucrose fractions from lower to higher sucrose density (left to right). Gels shown are representative out of three independent experiments

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