abcam

ab128568

Anti-CPT1A antibody [8F6AE9]

Anti-CPT1A antibody [8F6AE9] (ab128568) is a mouse monoclonal antibody detecting CPT1A in **Western Blot, Flow Cytometry, IHC-P, ICC/IF, ELISA**. Suitable for **Human, Mouse, Rat**.

- Clone 8F6AE9 is the most cited clone to CPT1A
- KO validated for confirmed specificity
- Over 170 publications

KO Validated

Key facts

Isotype	IgG2b
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	8F6AE9
Purification technique	Precipitation Ammonium Sulphate
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	Purity is near homogeneity as judged by SDS-PAGE. The antibody was produced in vitro using hybridomas grown in serum-free medium, and then concentrated by ammonium sulfate precipitation.

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	0.5 µg/mL
Notes	Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Expected

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

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

WB

Tested

Species	Recombinant fragment - Human
Dilution info	1 µg/mL
Notes	-

Species	Human
Dilution info	1 µg/mL
Notes	-

Species	Mouse
Dilution info	1 µg/mL
Notes	-

Species	Rat
Dilution info	1 µg/mL
Notes	-

In-Cell ELISA

Tested

Species	Human
Dilution info	0.1-1 µg/mL
Notes	-

Expected

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

Notes	-

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Rat
Dilution info	0.5-5 µg/mL
Notes	-

Expected

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

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

Target data

See full target information CPT1A

Function	Catalyzes the transfer of the acyl group of long-chain fatty acid-CoA conjugates onto carnitine, an essential step for the mitochondrial uptake of long-chain fatty acids and their subsequent beta-oxidation in the mitochondrion (PubMed:11350182, PubMed:14517221, PubMed:16651524, PubMed:9691089). Also possesses a lysine succinyltransferase activity that can regulate enzymatic activity of substrate proteins such as ENO1 and metabolism independent of its classical carnitine O-palmitoyltransferase activity (PubMed:29425493). Plays an

important role in hepatic triglyceride metabolism (By similarity). Also plays a role in inducible regulatory T-cell (iTreg) differentiation once activated by butyryl-CoA that antagonizes malonyl-CoA-mediated CPT1A repression (By similarity). Sustains the IFN-I response by recruiting ZDHCC4 to palmitoylate MAVS at the mitochondria leading to MAVS stabilization and activation (PubMed:38016475). Promotes ROS-induced oxidative stress in liver injury via modulation of NFE2L2 and NLRP3-mediated signaling pathways (By similarity).

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

Anti-CPT1A antibody [8F6AE9] (ab128568) is a House Mouse Monoclonal antibody and is validated for use in Flow Cyt, ICC/IF, IHC-P, In-Cell ELISA, WB in human, rat samples.

Anti-CPT1A antibody [8F6AE9] (ab128568) has been cited over 179 times in peer reviewed journals and is trusted by the scientific community.

Abcams high quality validation processes ensure Anti-CPT1A antibody [8F6AE9] (ab128568) has high sensitivity and specificity.

The specificity of Anti-CPT1A antibody [8F6AE9] (ab128568) has been confirmed by testing in knockout samples.

Anti-CPT1A antibody [8F6AE9] (ab128568) has 5 independent reviews from customers.

Anti-CPT1A antibody [8F6AE9] (ab128568) specifically detects CPT1A (UniProt ID: P50416; Molecular weight: 88kDa) and is sold in 100 ug selling sizes.

Antibody clone 8F6AE9 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 488, HRP (ab171449, ab198494).

CPT1A is crucial in fatty acid oxidation, and its dysfunction is linked to metabolic disorders, diabetic nephropathy, and certain cancers

This monoclonal antibody to CPT1A has been knockout validated in Western blot. The expected band for CPT1A was observed in wild type cells and the band was not seen in CPT1A knockout 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

CPT1A also known as carnitine palmitoyltransferase 1A is a vital enzyme involved in the transport of long-chain fatty acids across the mitochondrial membrane. This protein facilitates the conversion of fatty acids into acyl-carnitine a process necessary for beta-oxidation within the mitochondria. The molecular weight of CPT1A is approximately 88 kDa. CPT1A predominantly expresses in liver cells where energy metabolism from fatty acids is important. Alternate names for this target include CPT 1 and CTP1A reflecting its central role in metabolic processes related to lipid utilization.

Biological function summary

CPT1A plays a vital role in energy production by facilitating mitochondrial fatty acid oxidation. It does not function as a solitary enzyme but often associates with other enzymes forming a multiprotein complex that includes acyl-CoA synthetase. This complex enables efficient fatty acid transport and oxidation converting stored fats into usable energy. As CPT1A primarily operates in the liver its activity significantly impacts overall lipid and energy homeostasis demonstrating its critical regulatory role.

Pathways

CPT1A is central to the fatty acid beta-oxidation pathway an important process for breaking down fatty acids to produce energy. This pathway also involves proteins such as CPT1B a related isoform present in muscle tissues. CPT1A's function is important in the liver's capacity to regulate energy balance and respond to metabolic demands. Additionally CPT1A interacts within the signaling pathway of AMPK (AMP-activated protein kinase) which further integrates it into broader metabolic regulation networks linking energy status to cellular function.

Associated diseases and disorders

CPT1A is notably associated with metabolic syndromes and fatty liver disease. Mutations or deficiencies in CPT1A can lead to disorders like hepatic carnitine palmitoyltransferase 1A deficiency characterized by hypoketotic hypoglycemia and hepatomegaly. Furthermore its dysregulation can impact proteins such as ACC1 (acetyl-CoA carboxylase) in the context of metabolic syndrome. Research continues to explore the implications of CPT1A in non-alcoholic steatohepatitis highlighting its relevance in liver energy metabolism disorders and their pathophysiology.

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.

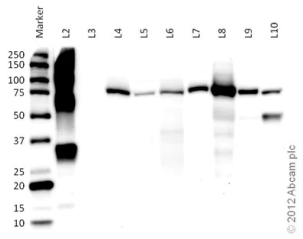
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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8 product images



Western blot - Anti-CPT1A antibody [8F6AE9] (ab128568)

CPT1A Western blot staining using mouse Anti-CPT1A antibody

Predicted partial recombinant protein band size : 32 kDa
Observed band size : 32 kDa
All lanes:
Western blot - Anti-CPT1A antibody [8F6AE9] (ab128568) at 1 µg/mL

Lane 1:
Marker

Lane 2:
Partial Human Recombinant CPT1A protein (ab128569) at 0.1 µg

Lane 3:
Full Length Human Recombinant OTC protein at 0.1 µg

Lane 4:
HepG2 (Human hepatocellular carcinoma cell line) Whole Cell Lysate at 20 µg

Lane 5:
H9C2 (Rat cardiomyoblast cell line) Whole Cell Lysate at 20 µg

Lane 6:
H4IIE (Rat hepatoma cell line) Whole Cell Lysate at 20 µg

Lane 7:
RHM (Rat heart mitochondrial homogenate) at 20 µg

Lane 8:
HLH (Human liver homogenate) at 20 µg

Lane 9:
RLH (Rat liver homogenate) at 20 µg

Lane 10:
MLH (Mouse liver homogenate) at 20 µg

Secondary

All lanes:
Goat polyclonal to Mouse IgG – H&L – Pre-Adsorbed (HRP) at 1/10000 dilution

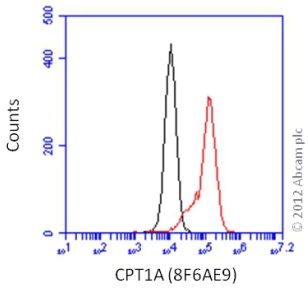
Developed using the ECL technique.

Performed under reducing conditions.

Predicted band size: 88 kDa

Observed band size: 88 kDa

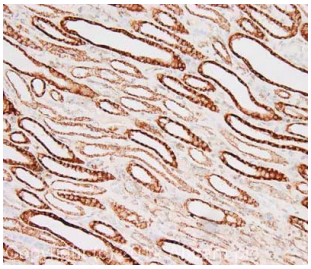
Exposure time: 1min



Flow Cytometry - Anti-CPT1A antibody [8F6AE9] (ab128568)

CPT1A Flow Cytometry staining using mouse Anti-CPT1A antibody

Overlay histogram showing HeLa cells stained with ab128568 (red line) or no primary antibody (black line). The cells were fixed with 4% paraformaldehyde (15 min) and then permeabilized with 0.1% Triton X-100 in PBS, 3% BSA for 10 min. The cells were then incubated in 3% BSA in PBS for 10 minutes to block non-specific protein-protein interactions followed by the antibody (ab128568, 1µg/mL) for 60 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96871) at 1/1000 dilution for 30 min.

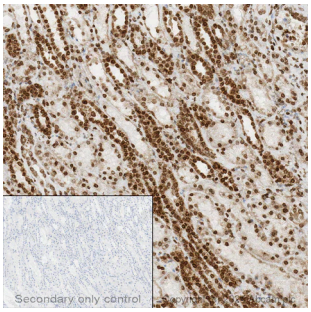


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CPT1A antibody [8F6AE9] (ab128568)

CPT1A Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-CPT1A antibody

IHC image of CPT1A staining in human normal kidney formalin fixed paraffin embedded tissue section, performed on a Leica Bond™ system using the standard protocol F. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH6, epitope retrieval solution 1) for 20 mins. The section was then incubated with ab128568, 0.5µg/ml, for 15 mins at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

For other IHC staining systems (automated and non-automated) customers should optimize variable parameters such as antigen retrieval conditions, primary antibody concentration and antibody incubation times.

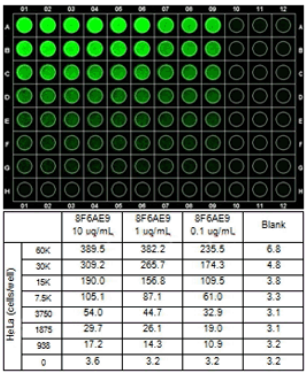


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-CPT1A antibody [8F6AE9] (ab128568)

Immunohistochemical analysis of formalin fixed paraffin embedded human kidney labelling CPT1A with ab128568 at a concentration of 0.1 µg/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 (CC2) 100°C, pH8.5 for 32mins.

ab128568 anti-CPT1A [8F6AE9] 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)



HeLa (cells/well)	8F6AE9 10 ug/mL	8F6AE9 1 ug/mL	8F6AE9 0.1 ug/mL	Blank
60K	389.5	382.2	235.5	6.8
30K	309.2	265.7	174.3	4.8
15K	190.0	156.8	109.5	3.8
7.5K	105.1	87.1	61.0	3.3
3750	54.0	44.7	32.9	3.1
1875	29.7	26.1	19.0	3.1
938	17.2	14.3	10.9	3.2
0	3.6	3.2	3.2	3.2

In-Cell ELISA - Anti-CPT1A antibody [8F6AE9] (ab128568)

In-Cell ELISA for Anti-CPT1A antibody (ab128568) stained HeLa cells (human)

Seeding: HeLa cells seeded in a 1:2 dilution series starting at 60,000 cells/well across Row A, 30,000 cells/well across Row B, etc. Row H contains no cells.

Table: Example In-Cell ELISA Average Data from shown plate.

Fixation: 4% paraformaldehyde PBS fixed for 15 minutes

Permeabilization: 0.3% Triton X-100 PBS for 30 minutes at room temperature while shaking

Blocking: 2x Sigma Block 0.3% Triton X-100 H2O for 2 hours at room temperature while shaking

Primary antibodies: All primaries diluted in 1x Sigma Block with 0.3% Triton X-100 incubated overnight at 4 °C.

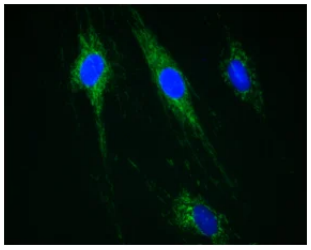
- Columns 1-3: Anti-CPT1A antibody (ab128568) 10 ug/mL

- Columns 4-6: Anti-CPT1A antibody (ab128568) 1 ug/mL

- Columns 7-9: Anti-CPT1A antibody (ab128568) 0.1 ug/mL

- Columns 10-12: No Primary

Washing: Briefly 4x with 0.3% TWEEN-20 PBS

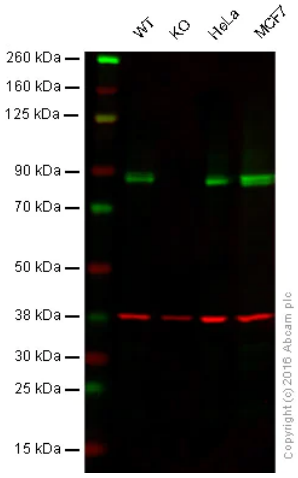


Immunocytochemistry/ Immunofluorescence - Anti-CPT1A antibody [8F6AE9] (ab128568)

CPT1A Immunocytochemistry/ Immunofluorescence staining using mouse Anti-CPT1A antibody

Immunofluorescent staining of CPT1A in H9C2 cells (rat) using ab128568.

Fixation: 4% paraformaldehyde PBS fixed for 20 minutes
Permebilization: 0.1% Triton X-100 PBS for 30 minutes at room temperature while rocking
Blocking: 2x Sigma Block 0.1% Triton X-100 H2O for 2 hours at room temperature while rocking
Primary antibodies: Anti-CPT1A antibody (ab128568) 0.5 ug/mL 1x Sigma Block with 0.1% Triton X-100 incubated overnight at 4 °C.
Washing: 3x 1% NGS 10 minutes/wash.
Secondary antibodies: Alexa 488 GAM 1:1000 diluted in 1% NGS with 0.1% Triton X-100 PBS incubated for 2 hours at room temperature while rocking.
Washing: 3x 1% NGS 10 minutes/wash.
DAPI: 20 ng/mL in 1% NGS, 0.1% Triton X-100 PBS.
Washing: 1x 1% NGS 10 minutes/wash.



Western blot - Anti-CPT1A antibody [8F6AE9] (ab128568)

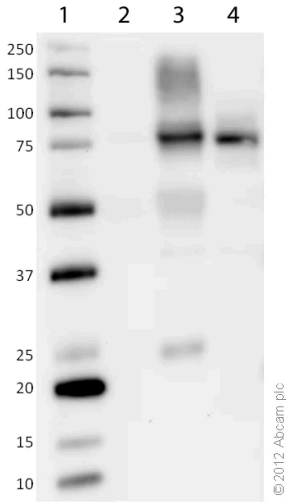
CPT1A Western blot staining using mouse Anti-CPT1A antibody

Lane 1: Wild-type HAP1 cell lysate (20 µg)
Lane 2: CPT1A knockout HAP1 cell lysate (20 µg)
Lane 3: HeLa cell lysate (20 µg)
Lane 4: MCF-7 cell lysate (20 µg)
Lanes 1 - 4: Merged signal (red and green). Green - ab128568 observed at 88 kDa. Red - loading control, ab181602, observed at 37 kDa.

ab128568 specifically detected the expected band for CPT1A in wild-type HAP1 cells. No band was observed in CPT1A knockout cells. Wild-type and CPT1A knockout samples were subjected to SDS-PAGE. ab128568 and ab181602 (loading control to GAPDH) were diluted at 1 µg/mL and 1/10000 respectively and incubated overnight at 4°C. Blots were developed with Goat anti-Mouse IgG H&L (IRDye® 800CW) preadsorbed (ab216772) and Goat Anti-Rabbit IgG H&L (IRDye® 680RD) preadsorbed (ab216777) secondary antibodies at 1/10000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-CPT1A antibody [8F6AE9] (ab128568)

Predicted band size: 88 kDa



Western blot - Anti-CPT1A antibody [8F6AE9] (ab128568)

All lanes:
Western blot - Anti-CPT1A antibody [8F6AE9] (ab128568) at 1 µg/mL

Lane 1:
Marker

Lane 2:
HHH (Human heart homogenate) RIPA Extract Immunoprecipitated with no primary antibody

Lane 3:
HHH (Human heart homogenate) RIPA Extract Immunoprecipitated with Anti-CPT1A antibody 8F6AE9 (ab128568)

Lane 4:
HHH (Human heart homogenate) RIPA Extract 20 µg

Secondary

All lanes:
Goat polyclonal to Mouse IgG – H&L – Pre-Adsorbed (HRP) at 1:10000

Developed using the ECL technique.

Performed under non-reducing conditions.

Predicted band size: 88 kDa

Exposure time: 1min

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