abcam

ab227996

Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free

Recombinant | RabMAb | KO Validated

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	EP704Y
Purification technique	Affinity purification Protein A
Specificity	This antibody recognises ATP citrate lyase (ACL). The mouse and rat recommendation is based on the WB results. We do not guarantee IHC-P for mouse and rat.
Concentration	1.026 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

WB

Tested

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-

Notes	-

Expected

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

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	ab199376- Rabbit monoclonal IgG (Low endotoxin, Azide free), is suitable for use as an isotype control with this antibody.

Expected

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

Predicted

Species	Common marmoset
Dilution info	-
Notes	-

Target data

See full target information ATP-citrate synthase

Function	Catalyzes the cleavage of citrate into oxaloacetate and acetyl-CoA, the latter serving as common substrate in multiple biochemical reactions in protein, carbohydrate and lipid metabolism.

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

ab227996 is the carrier-free version of ab40793.

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	ATP citrate lyase (ACL ACLY) is an enzyme responsible for converting citrate and coenzyme A into acetyl-CoA and oxaloacetate using ATP in the process. This reaction is key for lipid and cholesterol biosynthesis. ACLY's alternate name is ATP citrate (pro-S)-lyase and it has a molecular weight of approximately 120 kDa. The enzyme is expressed mainly in the cytoplasm with substantial amounts found in liver and adipose tissues.
Biological function summary	ATP citrate lyase plays an important role in lipid metabolism and energy production. It drives the conversion of citrate-derived acetyl-CoA a central metabolite in lipogenesis providing substrates for fatty acid and cholesterol synthesis. ACLY functions as a homotetramer complex to facilitate its enzymatic activity. This mechanism supports energy homeostasis linking carbohydrate metabolism with lipid biosynthesis.
Pathways	The enzyme ATP citrate lyase is instrumental in the citric acid cycle and fatty acid synthesis pathways. It is a central player in the cholesterol biosynthesis pathway which tightly connects to acetyl-CoA and citrate shuttle processes. In these pathways it interacts functionally with other enzymes such as acetyl-CoA carboxylase which further processes acetyl-CoA into malonyl-CoA serving as a precursor for fatty acid elongation.
Associated diseases and disorders	ATP citrate lyase becomes significant in metabolic syndrome and cancer. Elevated expression and activity are linked to an increased risk of metabolic diseases including obesity and type 2 diabetes due to its role in excessive lipid accumulation. Moreover cancer cells often exhibit upregulated ACLY activity encouraging tumor growth by supplying acetyl-CoA for lipid biosynthesis. Its activity is intricately linked to proteins such as fatty acid synthase which also contribute to altered lipid profiles in these conditions.

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

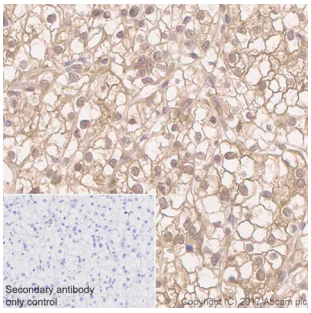
We do not recommend this combination. It is not covered by our product promise.

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.

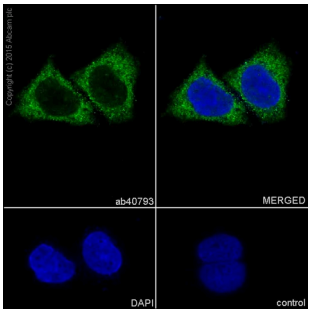
8 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free (ab227996)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human clear cell carcinoma of kidney tissue sections labeling ATP citrate lyase with Purified ab40793 at 1:100 dilution. Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer, pH 9.0). Tissue was counterstained with Hematoxylin. ImmunoHistoProbe one step HRP Polymer (ready to use) secondary antibody was used at 1:0 dilution. PBS instead of the primary antibody was used as the negative control.This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab40793).

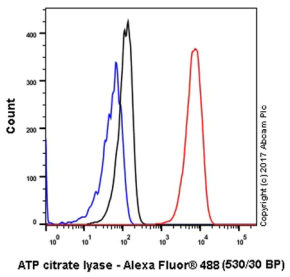


Immunocytochemistry/ Immunofluorescence - Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free (ab227996)

ATP citrate lyase Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ATP citrate lyase antibody

This ICC/IF data was generated using the same tni-ATP citrate lyase antibody clone, EP704Y, in a different buffer formulation (cat# ab40793).
Immunocytochemistry/Immunofluorescence analysis of HeLa cells labelling ATP citrate lyase with ab40793 at 1/500. Cells were fixed with 100% methanol. ab150077, an Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody.

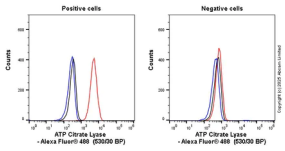
Control: PBS only.
Nuclear counter stain: DAPI.



Flow Cytometry (Intracellular) - Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free (ab227996)

ATP citrate lyase Flow Cytometry (Intracellular) staining using rabbit Anti-ATP citrate lyase antibody

Intracellular Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling ATP citrate lyase with purified ab40793 at 1/30 dilution (red). Cells were fixed with 4% Paraformaldehyde. A Goat anti rabbit IgG (Alexa Fluor® 488) secondary antibody was used at 1/2000 dilution. Isotype control - Rabbit monoclonal IgG (Black). Unlabeled control - Cell without incubation with primary antibody and secondary antibody (Blue). This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab40793).



Flow Cytometry (Intracellular) - Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free (ab227996)

ATP citrate lyase Flow Cytometry (Intracellular) staining using rabbit Anti-ATP citrate lyase antibody

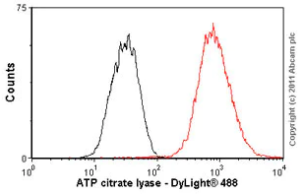
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab40793).
Flow cytometry overlay histogram showing left wild-type HAP1 positive cells and right negative ACLY knockout HAP1 stained with ab40793 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilised with 0.1% PBS-Triton X-100 for 15 min. The cells were then incubated in 1x PBS containing 10% normal goat serum to block non-specific protein-protein interaction followed by the antibody (ab40793) (1x 10^6 in 100µl at 0.04 µg/ml (1/6225 dilution)) for 30min at 22°C.

The secondary antibody Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed was incubated at 1/4000 dilution for 30min at 22°C.

Isotype control antibody was Recombinant Rabbit IgG, monoclonal [EPR25A] - Isotype Control (black line) used at the same concentration and conditions as the primary antibody. Unlabelled sample (blue line) was also used as a control.

Acquisition of >5000 events were collected using a 50 mW Blue laser (488nm) and 530/30 bandpass filter.

This antibody gave a positive signal in wild-type HAP1 fixed with 4% formaldehyde (10 min) and then permeabilised with 0.1% PBS-Triton X-100 for 15 min under the same conditions.

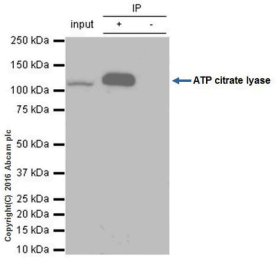


Flow Cytometry (Intracellular) - Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free (ab227996)

ATP citrate lyase Flow Cytometry (Intracellular) staining using rabbit Anti-ATP citrate lyase antibody

Overlay histogram showing HeLa cells stained with unpurified ab40793 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The

cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab40793, 1/100 dilution) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-rabbit IgG (H+L) (ab96899) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was rabbit IgG (monoclonal) (1µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab40793).



Immunoprecipitation - Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free (ab227996)

Unpurified ab40793 at 1/40 immunoprecipitating ATP citrate lyase in HeLa (human cervix adenocarcinoma) whole cell lysate.
Lane 1 (input): HeLa (human cervix adenocarcinoma) whole cell lysate 10µg

Lane 2 (+): ab40793 + HeLa (human cervix adenocarcinoma) whole cell lysate

Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab40793 in HeLa (human cervix adenocarcinoma) whole cell lysate

For western blotting, ab40793 at 1/1000 dilution and VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10,000 dilution.

Blocking buffer and concentration: 5% NFDM/TBST.

Diluting buffer and concentration: 5% NFDM /TBST.

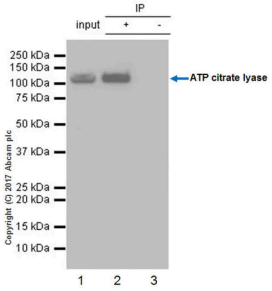
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab40793).

All lanes:
Immunoprecipitation - Anti-ATP citrate lyase antibody [EP704Y] (ab40793)

Predicted band size: 120 kDa

Observed band size: 122 kDa

Exposure time: 10s



Immunoprecipitation - Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free (ab227996)

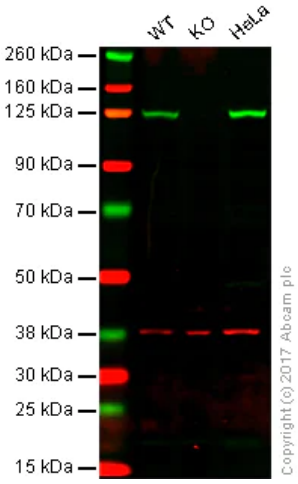
ab40793 (purified) at 1:20 dilution (1.5µg) immunoprecipitating ATP citrate lyase in HeLa whole cell lysate.

Lane 1 (input): HeLa (Human cervix adenocarcinoma epithelial cell) whole cell lysate,10µg
Lane 2 (+): ab40793 & HeLa whole cell lysate
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab40793 in HeLa whole cell lysate.

For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366) was used for detection at 1:1000 dilution.
Blocking and diluting buffer: 5% NFDM/TBST.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab40793).

All lanes:
Immunoprecipitation - Anti-ATP citrate lyase antibody [EP704Y] (ab40793)

Predicted band size: 120 kDa



Western blot - Anti-ATP citrate lyase antibody [EP704Y] - BSA and Azide free (ab227996)

ATP citrate lyase Western blot staining using rabbit Anti-ATP citrate lyase antibody

This WB data was generated using the same tni-ATP citrate lyase antibody clone, EP704Y, in a different buffer formulation (cat# ab40793).
Lane 1: Wild-type HAP1 whole cell lysate (20 µg)
Lane 2: ATP citrate lyase knockout HAP1 whole cell lysate (20 µg)
Lane 3: HeLa whole cell lysate (20 µg)

Lanes 1 - 3: Merged signal (red and green). Green - ab40793 observed at 125 kDa. Red - loading control, ab9484, observed at 37 kDa.

ab40793 was shown to specifically react with ATP citrate lyase in wild-type HAP1 cells as signal was lost in ATP citrate lyase knockout cells. Wild-type and ATP citrate lyase knockout samples were subjected to SDS-PAGE. ab40793 and ab9484 (Mouse anti-GAPDH loading control) were incubated overnight at 4°C at 1/1000 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed ab216776 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-ATP citrate lyase antibody [EP704Y] (ab40793)

Predicted band size: 120 kDa

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