abcam

ab239914

Anti-ACADM/MCAD antibody [EPR3708] - 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	EPR3708
Purification technique	Affinity purification Protein A
Concentration	0.962 - 1.06 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-

Notes	Perform heat-mediated antigen retrieval before commencing with IHC staining protocol.

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

IP

Tested

Species	Mouse
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

WB

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Rat
Dilution info	-
Notes	-

Target data

See full target information ACADM

Function

Medium-chain specific acyl-CoA dehydrogenase is one of the acyl-CoA dehydrogenases that catalyze the first step of mitochondrial fatty acid beta-oxidation (FAO), breaking down fatty acids into acetyl-CoA and allowing the production of energy from fats (PubMed:1970566, PubMed:21237683, PubMed:2251268, PubMed:8823175). The first step of FAO consists in the proR-proR stereospecific alpha, beta-dehydrogenation of fatty acyl-CoA thioesters using the electron transfer flavoprotein (ETF) as their physiologic electron acceptor, resulting in the formation of trans-2-enoyl-CoA ((2E)-enoyl-CoA) (PubMed:2251268). ETF is the electron acceptor that transfers electrons to the main mitochondrial respiratory chain via ETF-ubiquinone oxidoreductase (ETF dehydrogenase) (PubMed:15159392, PubMed:25416781). Among the different mitochondrial acyl-CoA dehydrogenases, medium-chain specific acyl-CoA dehydrogenase has preference for fatty acyl-CoAs with saturated 6 to 12 carbons long primary chains, making it but can also catalyze longer chains such as C14 and C16 (PubMed:1970566, PubMed:21237683, PubMed:2251268, PubMed:8823175).

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

ab239914 is the carrier-free version of ab92461.

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	ACADM also known as MCAD (medium-chain acyl-CoA dehydrogenase) is an enzyme that plays a significant role in fatty acid metabolism. It weighs approximately 44 kDa and expresses mainly in the liver heart and skeletal muscles. Functions of MCAD involve catalyzing the initial step in the mitochondrial fatty acid β-oxidation spiral specifically for the medium-chain fatty acids. This enzyme helps in the conversion of fatty acyl-CoA to trans-enoyl-CoA through dehydrogenation.
Biological function summary	The enzyme facilitates energy production by breaking down medium-chain fatty acids within mitochondria. MCAD operates as a homotetramer complex where each subunit significantly contributes to its overall function. Such enzymatic activity is important for providing energy particularly when glycogen stores are low. Its efficient operation during fasting states indicates its importance in metabolic homeostasis.
Pathways	Medium-chain acyl-CoA dehydrogenase (MCAD) is integral to the mitochondrial fatty acid beta-oxidation pathway. This pathway is a primary route for fatty acid catabolism ultimately leading to energy production in the form of ATP. MCAD's activity also relates to other fatty acid oxidation enzymes like VLCAD (very-long-

	chain acyl-CoA dehydrogenase) and SCAD (short-chain acyl-CoA dehydrogenase) which operate on different chain-length fatty acids cooperating to maintain energy balance.
Associated diseases and disorders	MCAD deficiency is a common metabolic disorder that impairs the normal breakdown of fatty acids. This condition results in the accumulation of fatty acid intermediates leading to hypoketotic hypoglycemia during fasting periods. Individuals with MCAD deficiency may experience lethargy vomiting and seizures. The disorder connects with other enzymes such as LCHAD (long-chain 3-hydroxyacyl-CoA dehydrogenase) involved in similar pathways and deficiencies can result in related metabolic dysfunctions.

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

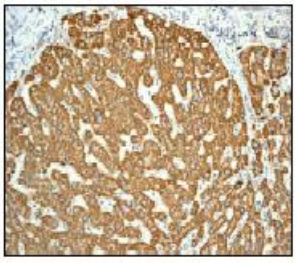
We do not recommend this combination. It is not covered by our product promise.

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.

11 product images

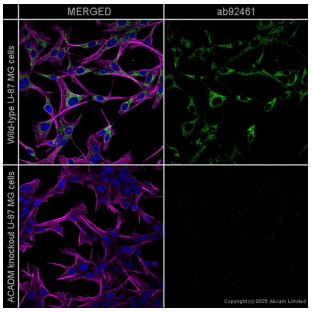


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

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

ab92461 (unpurified), at 1/100 dilution, staining ACADM/MCAD in formalin-fixed, paraffin-embedded Human liver tissue by immunohistochemistry.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab92461).

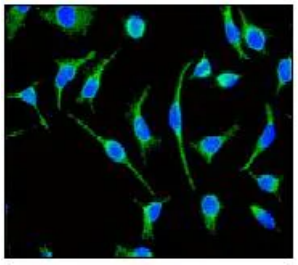
Heat mediated antigen retrieval was performed before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

ACADM/MCAD Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ACADM/MCAD antibody

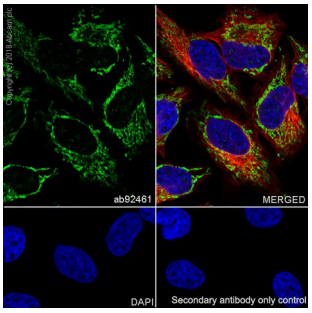
This data was developed using ab92461, the same antibody clone in a different buffer formulation. Immunofluorescent analysis of 100% methanol-fixed 0.1% Triton X-100 permeabilized U-87 MG WT and U-87 MG ACADM KO cells labelling medium-chain specific acyl-CoA dehydrogenase with ab92461 at 1 µg/ml concentration, followed by ab150081 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 dilution (Green). ab7291 Anti-alpha Tubulin antibody [DM1A] was used to counterstain tubulin at 1/1000 dilution (Magenta). The nuclear counterstain was DAPI (Blue).



Immunocytochemistry/ Immunofluorescence - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

ACADM/MCAD Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ACADM/MCAD antibody

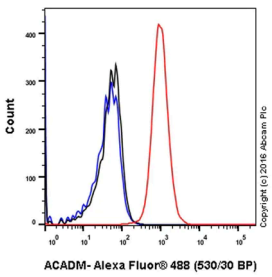
Immunofluorescent staining of ACADM/MCAD in HeLa cells using ab92461 (unpurified) at 1/100 dilution.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab92461).



Immunocytochemistry/ Immunofluorescence - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

ACADM/MCAD Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ACADM/MCAD antibody

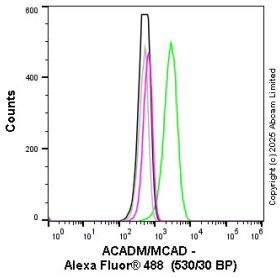
Immunocytochemistry/ Immunofluorescence analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling ACADM/MCAD with purified ab92461 at 1:50 dilution (10 µg/ml). Cells were fixed in 4% Paraformaldehyde and permeabilized with 0.1% tritonX-100. Cells were counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) 1:200 (2.5 µg/ml). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) was used as the secondary antibody at 1:1000 (2 µg/ml) dilution. DAPI (blue) was used as nuclear counterstain. PBS instead of the primary antibody was used as the secondary antibody only control.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (anti acadm mcad antibody epr3708 immunocytochemistry hela human)



Flow Cytometry (Intracellular) - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

ACADM/MCAD Flow Cytometry (Intracellular) staining using rabbit Anti-ACADM/MCAD antibody

Intracellular Flow Cytometry analysis of HeLa (human cervix adenocarcinoma) cells labeling ACADM/MCAD with unpurified ab92461 at 1/50 dilution (10ug/ml) (red). Cells were fixed with 4% paraformaldehyde and permeabilised with 90% methanol. A Goat anti rabbit IgG (Alexa Fluor® 488) (1/2000 dilution) was used as the secondary antibody. Rabbit monoclonal IgG (Black) was used as the isotype control, cells without incubation with primary antibody and secondary antibody (Blue) was used as the unlabeled control.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab92461).



Flow Cytometry (Intracellular) - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

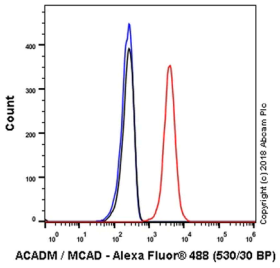
ACADM/MCAD Flow Cytometry (Intracellular) staining using rabbit Anti-ACADM/MCAD antibody

This data was developed using ab92461, the same antibody clone in a different buffer formulation. Flow cytometry overlay histogram showing wild-type U87-MG (green line) and ACADM/MCAD knockout U87-MG stained with ab92461 (magenta line). The cells were fixed with 80% methanol (5 min) and then permeabilized 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 (ab92461) (1x 10^6 in 100µl at 1 µg/ml (1/647)) for 30min at 22°C.

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

Isotype control antibody was Recombinant Rabbit IgG, monoclonal [EPR25A] - Isotype Control in U87-MG WT cells (black line) and U87-MG-ACADM/MCAD KO cells (grey line), at the same conditions as the primary antibody.

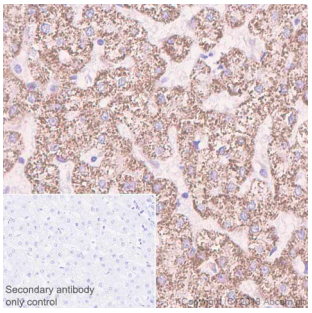
Acquisition of <5000 events were collected using a 50 mW Blue laser (488nm) and 530/30 bandpass filter.



Flow Cytometry (Intracellular) - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

ACADM/MCAD Flow Cytometry (Intracellular) staining using rabbit Anti-ACADM/MCAD antibody

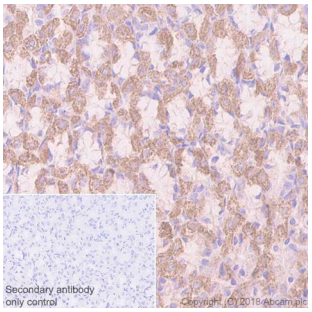
Intracellular Flow Cytometry analysis of HeLa (Human cervix adenocarcinoma epithelial cell) cells labeling ACADM/MCAD with purified ab92461 at 1/60 dilution (10 µg/ml) (Red). Cells were fixed with 4% Paraformaldehyde and permeabilised with 90% Methanol. A Goat anti rabbit IgG (Alexa Fluor® 488, ab150077) secondary antibody was used at 1/2000. 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 (ab92461)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

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

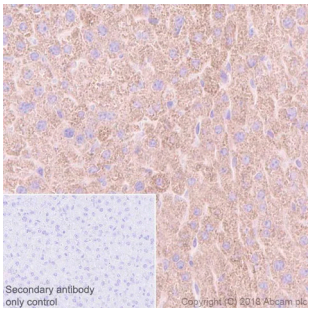
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of human liver tissue sections labeling ACADM/MCAD with purified ab92461 at 1/600 dilution (1.02 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab92461)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

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

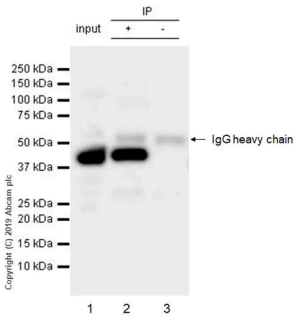
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of rat stomach tissue sections labeling ACADM/MCAD with purified ab92461 at 1/600 dilution (1.02 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab92461)



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

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

Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) analysis of mouse liver tissue sections labeling ACADM/MCAD with purified ab92461 at 1/600 dilution (1.02 µg/ml). Heat mediated antigen retrieval was performed using ab93684 (Tris/EDTA buffer, pH 9.0). ImmunoHistoProbe one step HRP Polymer (ready to use) was used as the secondary antibody. Negative control: PBS instead of the primary antibody. Hematoxylin was used as a counterstain. This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab92461)



Immunoprecipitation - Anti-ACADM/MCAD antibody [EPR3708] - BSA and Azide free (ab239914)

ab92461 (purified) at 1/30 dilution (2 µg) immunoprecipitating ACADM/MCAD in Mouse heart lysate.
Lane 1 (input): Mouse heart lysate 10 µg
Lane 2 (+): ab92461 & Mouse heart lysate
Lane 3 (-): Rabbit monoclonal IgG (ab172730) instead of ab92461 in Mouse heart lysate
For western blotting, VeriBlot for IP Detection Reagent (HRP) (ab131366) was used 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 (ab92461)
All lanes:
Immunoprecipitation - Anti-ACADM/MCAD antibody [EPR3708] (ab92461)

Predicted band size: 47 kDa

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