abcam

ab110302

Anti-HADHA + HADHB antibody [4A8BG12]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	pH: 7.5 Preservative: 0.02% Sodium azide Constituents: HEPES buffered saline
Form	Liquid
Clonality	Monoclonal
Clone number	4A8BG12
Purification technique	Affinity purification Immunogen
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	ab110302 was produced in vitro using hybridomas grown in serum-free medium, and then purified by affinity purification.

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	-
Notes	Perform heat-mediated antigen retrieval via the pressure cooker method before commencing with IHC staining protocol.

ICC

Tested

Species	Human
Dilution info	5 µg/mL
Notes	-

IP

Tested

Species	Human
Dilution info	-
Notes	0.5-2mg protein/10ul antibody

Flow Cyt

Tested

Species	Human
Dilution info	1 µg/mL
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Target data

See full target information HADHA

Function

Mitochondrial trifunctional enzyme catalyzes the last three of the four reactions of the mitochondrial beta-oxidation pathway (PubMed:1550553, PubMed:29915090, PubMed:30850536, PubMed:8135828, PubMed:31604922). The mitochondrial beta-oxidation pathway is the major energy-producing process in tissues and is performed through four consecutive reactions breaking down fatty acids into acetyl-CoA (PubMed:29915090). Among the enzymes involved in this pathway, the trifunctional enzyme exhibits specificity for long-chain fatty acids (PubMed:30850536, PubMed:31604922). Mitochondrial trifunctional enzyme is a heterotetrameric complex composed of two proteins, the trifunctional enzyme subunit alpha/HADHA described here carries the 2,3-enoyl-CoA hydratase and the 3-hydroxyacyl-CoA dehydrogenase activities while the trifunctional enzyme subunit beta/HADHB bears the 3-ketoacyl-CoA thiolase activity (PubMed:29915090, PubMed:30850536, PubMed:8135828). Independently of subunit beta, HADHA also

exhibits a cardiolipin acyltransferase activity that participates in cardiolipin remodeling; cardiolipin is a major mitochondrial membrane phospholipid (PubMed:23152787, PubMed:31604922). HADHA may act downstream of Tafazzin/TAZ, that remodels monolysocardiolipin (MLCL) to a cardiolipin intermediate, and then HADHA may continue to remodel this species into mature tetralinoleoyl-cardiolipin (PubMed:31604922). Has also been proposed to act directly on MLCL; capable of acylating MLCL using different acyl-CoA substrates, with highest activity for oleoyl-CoA (PubMed:23152787).

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

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	HADHA (Hydroxyacyl-CoA Dehydrogenase Trifunctional Multienzyme Complex Subunit Alpha) and HADHB (Trifunctional Protein Subunit Beta) function mechanically as essential components of the mitochondrial trifunctional protein (MTP). These proteins facilitate the three-step process of fatty acid beta-oxidation in the mitochondria. HADHA and HADHB work in tandem to carry out dehydrogenase hydratase and thiolase activities. HADHA has a molecular mass of about 82 kDa while HADHB is approximately 51 kDa. These proteins express primarily in tissues with high energy demands including heart liver and skeletal muscle.
Biological function summary	Fatty acid breakdown plays an indispensable role in cellular energy supply. HADHA and HADHB form an integral part of the MTP complex essential for the normal beta-oxidation of long-chain fatty acids. The complex catalyzes important reactions needed to convert long-chain fatty acids to acetyl-CoA which then enters the TCA cycle for ATP production. An efficient functioning MTP complex ensures cells maintain energy homeostasis particularly when glucose is scarce.

Pathways	Long-chain fatty acid metabolism and energy production rely heavily on HADHA and HADHB within the mitochondrial beta-oxidation pathway. These proteins closely interact with enzymes such as carnitine palmitoyltransferase I (CPT1) and long-chain-fatty-acid—CoA ligase. HADHA and HADHB help in the removal of two-carbon units from fatty acids demonstrating their link to both the lipid metabolism pathway and the TCA cycle forming a bridge to energy conversion processes necessary for ATP synthesis.
Associated diseases and disorders	Defects in HADHA and HADHB relate to inherited metabolic diseases like trifunctional protein deficiency and long-chain 3-hydroxyacyl-CoA dehydrogenase deficiency (LCHAD). Impaired activity of these proteins results in an accumulation of unused long-chain fatty acids causing severe energy deficiency and rhabdomyolysis. The malfunctioning of closely related proteins like medium-chain acyl-CoA dehydrogenase (MCAD) could exacerbate energy metabolism disorders highlighting their central role in maintaining metabolic health.

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

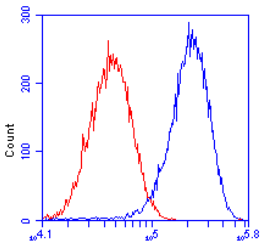
We do not recommend this combination. It is not covered by our product promise.

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.

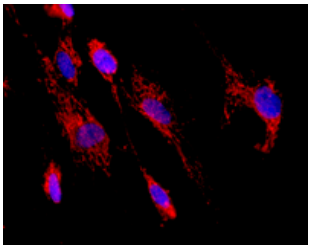
4 product images



Flow Cytometry - Anti-HADHA + HADHB antibody [4A8BG12] (ab110302)

HADHA + HADHB Flow Cytometry staining using mouse Anti-HADHA + HADHB antibody

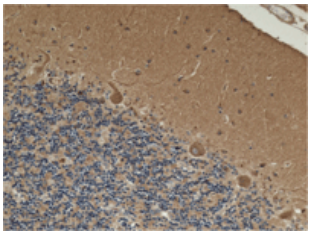
Flow cytometric analysis using ab110302 at 1µg/ml staining HADHA/HADHB in HL60 cells (blue). Isotype control antibody (red).



Immunocytochemistry - Anti-HADHA + HADHB antibody [4A8BG12] (ab110302)

HADHA + HADHB Immunocytochemistry staining using mouse Anti-HADHA + HADHB antibody

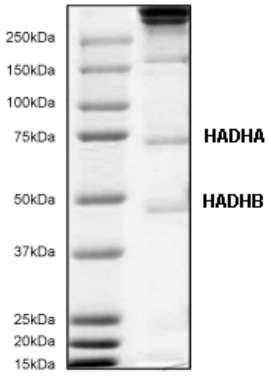
Immunocytochemistry analysis using ab110302 at 5µg/ml staining HADHA/HADHB in HDFn cells.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-HADHA + HADHB antibody [4A8BG12] (ab110302)

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

Immunohistochemistry analysis using ab110302 staining HADHA/HADHB in Human cerebellum Formalin-fixed, Paraffin-embedded tissue.



Immunoprecipitation - Anti-HADHA + HADHB antibody [4A8BG12] (ab110302)

Detection of ab110302 by Western Blot of Immunprecipitate.
Staining of HADHA/HADHB in 1 mg HepG2 cell lysate/10ul antibody conjugated beads immunoprecipitated using ab110302.
All lanes:
Immunoprecipitation - Anti-HADHA + HADHB antibody [4A8BG12] (ab110302)

Predicted band size: 51 kDa

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