abcam

ab167410

Anti-ERAB antibody [EPR11839(B)]

Recombinant | RabMAb

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Preservative: 0.01% Sodium azide Constituents: PBS, 40% Glycerol (glycerin, glycerine), 0.05% BSA
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	EPR11839(B)
Purification technique	Affinity purification Protein A
Concentration	0.138 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	1/50 - 1/100
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

IP

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

WB

Tested

Species	Human
Dilution info	1/10000 - 1/50000
Notes	-

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	1/100 - 1/500
Notes	-

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/10 - 1/100
Notes	ab172730 - Rabbit monoclonal IgG, is suitable for use as an isotype control with this antibody.

Predicted

Species	Mouse, Rat
Dilution info	-
Notes	-

Target data

See full target information HSD17B10

Function

Mitochondrial dehydrogenase involved in pathways of fatty acid, branched-chain amino acid and steroid metabolism (PubMed:10600649, PubMed:12917011, PubMed:18996107, PubMed:19706438, PubMed:20077426, PubMed:25925575, PubMed:26950678, PubMed:28888424, PubMed:9553139). Acts as (S)-3-hydroxyacyl-CoA dehydrogenase in mitochondrial fatty acid beta-oxidation, a major degradation pathway of fatty acids. Catalyzes the third step in the beta-oxidation cycle, namely the reversible conversion of (S)-3-hydroxyacyl-CoA to 3-ketoacyl-CoA. Preferentially accepts straight medium- and short-chain acyl-CoA substrates with highest efficiency for (3S)-hydroxybutanoyl-CoA (PubMed:10600649, PubMed:12917011, PubMed:25925575, PubMed:26950678, PubMed:9553139). Acts as 3-hydroxy-2-methylbutyryl-CoA dehydrogenase in branched-chain amino acid catabolic pathway. Catalyzes the oxidation of 3-hydroxy-2-methylbutanoyl-CoA into 2-methyl-3-oxobutanoyl-CoA, a step in isoleucine degradation pathway (PubMed:18996107, PubMed:19706438, PubMed:20077426). Has hydroxysteroid dehydrogenase activity toward steroid hormones and bile acids. Catalyzes the oxidation of 3alpha-, 17beta-, 20beta- and 21-hydroxysteroids and 7alpha- and 7beta-hydroxy bile acids (PubMed:10600649, PubMed:12917011). Oxidizes allopregnanolone/brexanolone at the 3alpha-hydroxyl group, which is known to be critical for the activation of gamma-aminobutyric acid receptors (GABAARs) chloride channel (PubMed:19706438,

PubMed:28888424). Has phospholipase C-like activity toward cardiolipin and its oxidized species. Likely oxidizes the 2'-hydroxyl in the head group of cardiolipin to form a ketone intermediate that undergoes nucleophilic attack by water and fragments into diacylglycerol, dihydroxyacetone and orthophosphate. Has higher affinity for cardiolipin with oxidized fatty acids and may degrade these species during the oxidative stress response to protect cells from apoptosis (PubMed:26338420). By interacting with intracellular amyloid-beta, it may contribute to the neuronal dysfunction associated with Alzheimer disease (AD) (PubMed:9338779). Essential for structural and functional integrity of mitochondria (PubMed:20077426). In addition to mitochondrial dehydrogenase activity, moonlights as a component of mitochondrial ribonuclease P, a complex that cleaves tRNA molecules in their 5'-ends (PubMed:18984158, PubMed:24549042, PubMed:25925575, PubMed:26950678, PubMed:28888424). Together with TRMT10C/MRPP1, forms a subcomplex of the mitochondrial ribonuclease P, named MRPP1-MRPP2 subcomplex, which displays functions that are independent of the ribonuclease P activity (PubMed:23042678, PubMed:29040705). The MRPP1-MRPP2 subcomplex catalyzes the formation of N(1)-methylguanine and N(1)-methyladenine at position 9 (m1G9 and m1A9, respectively) in tRNAs; HSD17B10/MRPP2 acting as a non-catalytic subunit (PubMed:23042678, PubMed:25925575, PubMed:28888424). The MRPP1-MRPP2 subcomplex also acts as a tRNA maturation platform: following 5'-end cleavage by the mitochondrial ribonuclease P complex, the MRPP1-MRPP2 subcomplex enhances the efficiency of 3'-processing catalyzed by ELAC2, retains the tRNA product after ELAC2 processing and presents the nascent tRNA to the mitochondrial CCA tRNA nucleotidyltransferase TRNT1 enzyme (PubMed:29040705). Associates with mitochondrial DNA complexes at the nucleoids to initiate RNA processing and ribosome assembly.

Storage

Shipped at conditions	Conditional Ambient
Appropriate short-term storage duration	1-2 weeks
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	-20°C
Aliquoting information	Upon delivery aliquot

Notes

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.

Supplementary info

This supplementary information is collated from multiple sources and compiled automatically.

Activity summary	ERAB also known as 17-beta-hydroxysteroid dehydrogenase type 10 (HSD10) or 3-hydroxyacyl-CoA dehydrogenase type II is a multifunctional mitochondrial enzyme. It has a molecular mass of approximately 27 kDa. This enzyme is expressed in various tissues with high expression in the liver kidney heart and brain. ERAB plays a role in several metabolic processes thanks to its ability to catalyze reactions involving the oxidation of hydroxyacyl-CoA to ketoacyl-CoA derivatives alongside other substrates like steroids.
Biological function summary	The function of this enzyme extends beyond its metabolic activities. ERAB is part of the mitochondrial enzyme complex responsible for fatty acid oxidation and energy production. This places it centrally in cellular energy homeostasis. Additionally ERAB participates in the metabolism of neurosteroids which impacts brain function. Through its interactions ERAB influences signaling pathways by modulating local steroid concentrations in the nervous system affecting cellular communication and response.
Pathways	ERAB associates with key biochemical pathways including the beta-oxidation of fatty acids and the steroid hormone metabolism pathway. It interacts with acetyl-CoA acyltransferase 2 (ACAA2) within these metabolic pathways facilitating the conversion of substrates vital for energy production and steroid synthesis. This involvement underpins the enzyme’s significance in maintaining metabolic equilibrium through its catalytic activities on essential biological molecules.
Associated diseases and disorders	ERAB has links to Alzheimer's disease and rare mitochondrial disorders. Studies show that ERAB binds amyloid-beta peptides which accumulate in the brains of Alzheimer's disease patients. This interaction suggests ERAB's potential contribution to the pathogenesis of the disease. Additionally mutations affecting ERAB lead to HSD10 mitochondrial disease a disorder characterized by metabolic and neurological defects. One of the proteins that interacts with ERAB in the context of disease is amyloid precursor protein (APP) which further implicates ERAB in Alzheimer's disease through pathological pathways.

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

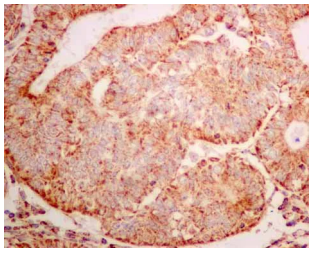
We do not recommend this combination. It is not covered by our product promise.

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.

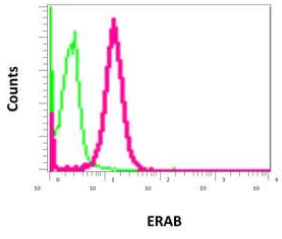
10 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERAB antibody [EPR11839(B)] (ab167410)

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

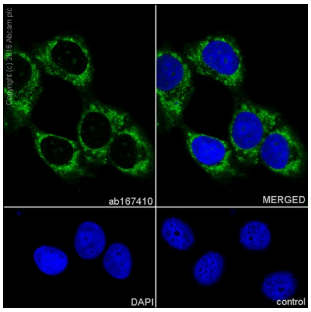
ab167410 showing +ve staining in Human endometrial carcinoma.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Flow Cytometry (Intracellular) - Anti-ERAB antibody [EPR11839(B)] (ab167410)

ERAB Flow Cytometry (Intracellular) staining using rabbit Anti-ERAB antibody

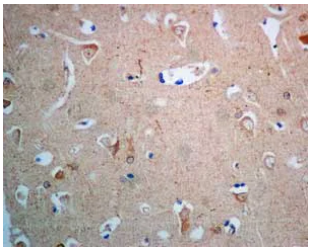
Intracellular flow cytometric analysis of permeabilized K562 cells labeling ERAB with ab167410 at 1/10 dilution (red) compared to a rabbit IgG negative control (green).



Immunocytochemistry/ Immunofluorescence - Anti-ERAB antibody [EPR11839(B)] (ab167410)

ERAB Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERAB antibody

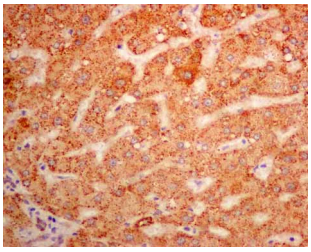
Immunocytochemistry/Immunofluorescence analysis of MCF-7 (human breast carcinoma) labelling ERAB with purified ab167410 at 1/500. Cells were fixed with 100% methanol. An Alexa Fluor® 488-conjugated goat anti-rabbit IgG (1/1000) was used as the secondary antibody (ab150077). Nuclei counterstained with DAPI (blue).
Control: PBS only



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERAB antibody [EPR11839(B)] (ab167410)

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

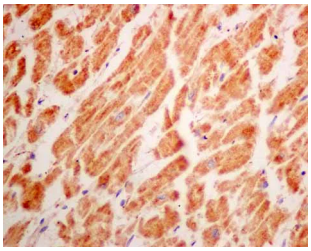
Immunohistochemical analysis of paraffin-embedded Human brain tissue labeling ERAB with ab167410 at 1/50 dilution.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERAB antibody [EPR11839(B)] (ab167410)

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

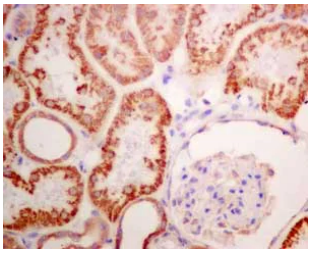
ab167410 showing +ve staining in Human normal liver.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERAB antibody [EPR11839(B)] (ab167410)

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

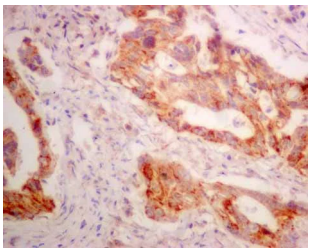
ab167410 showing +ve staining in Human heart.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERAB antibody [EPR11839(B)] (ab167410)

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

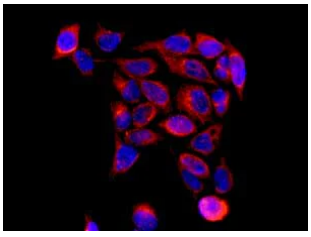
Immunohistochemical analysis of paraffin-embedded Human kidney tissue labeling ERAB with ab167410 at 1/50 dilution.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-ERAB antibody [EPR11839(B)] (ab167410)

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

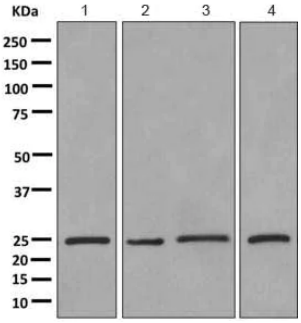
ab167410 showing +ve staining in Human gastric adenocarcinoma.
Perform heat mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.



Immunocytochemistry/ Immunofluorescence - Anti-ERAB antibody [EPR11839(B)] (ab167410)

ERAB Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-ERAB antibody

Immunofluorescent analysis of HeLa cells labeling ERAB with ab167410 at 1/100 dilution. DAPI nuclear staining (blue).



Western blot - Anti-ERAB antibody [EPR11839(B)] (ab167410)

All lanes:
Western blot - Anti-ERAB antibody [EPR11839(B)] (ab167410) at 1/10000 dilution

Lane 1:
Jurkat cell lysate at 10 µg

Lane 2:
293T cell lysate at 10 µg

Lane 3:
K562 cell lysate at 10 µg

Lane 4:
HeLa cell lysate at 10 µg

Secondary

All lanes:
HRP labeled goat anti-rabbit at 1/2000 dilution

Predicted band size: 27 kDa

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