abcam

ab110286

Anti-FH/Fumarase antibody [8F12BB5]

Key facts

Isotype	IgG2a
Host species	Mouse
Storage buffer	pH: 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	8F12BB5
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 near homogeneity as judged by SDS-PAGE. The antibody was produced in-vitro using hybridomas grown in serum-free medium and then purified by biochemical fractionation.

Reactivity data

IP

Tested

Species	Rat, Human, Cow
Dilution info	-

Notes	-

Flow Cyt

Tested

Species	Human
Dilution info	1 µg/mL
Notes	Recommend 0.1% Triton X-100 permeabilization. ab170191 - Mouse monoclonal IgG2a, is suitable for use as an isotype control with this antibody.

Expected

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

IHC-P

Tested

Species	Human
Dilution info	-
Notes	Perform heat mediated antigen retrieval - 1 min pressure cook in 1mmol EDTA pH8.

Expected

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

ICC/IF

Tested

Species	Human

Dilution info	5 µg/mL
Notes	-

Expected

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

Target data

See full target information FH

Function

Catalyzes the reversible stereospecific interconversion of fumarate to L-malate (PubMed:30761759). Experiments in other species have demonstrated that specific isoforms of this protein act in defined pathways and favor one direction over the other (Probable). Isoform Mitochondrial. Catalyzes the hydration of fumarate to L-malate in the tricarboxylic acid (TCA) cycle to facilitate a transition step in the production of energy in the form of NADH. Isoform Cytoplasmic. Catalyzes the dehydration of L-malate to fumarate (By similarity). Fumarate metabolism in the cytosol plays a role during urea cycle and arginine metabolism; fumarate being a by-product of the urea cycle and amino-acid catabolism (By similarity). Also plays a role in DNA repair by promoting non-homologous end-joining (NHEJ) (PubMed:20231875, PubMed:26237645). In response to DNA damage and phosphorylation by PRKDC, translocates to the nucleus and accumulates at DNA double-strand breaks (DSBs): acts by catalyzing formation of fumarate, an inhibitor of KDM2B histone demethylase activity, resulting in enhanced dimethylation of histone H3 'Lys-36' (H3K36me2) (PubMed:26237645).

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	Fumarase also known as fumarate hydratase (FH) catalyzes the reversible hydration of fumarate to malate in the citric acid cycle. This enzyme weighs approximately 49 kDa. Fumarase is predominantly expressed in the mitochondria where it performs its main function. However a cytosolic form exists that plays roles outside of the citric acid cycle especially related to DNA damage response.
Biological function summary	Fumarase converts fumarate into malate which is a critical step in cellular energy production. In the mitochondria fumarase acts as a part of the TCA cycle facilitating ATP generation. In the cytosol beyond its enzymatic activity fumarase participates in DNA repair indicating its dual functionality. This suggests that fumarase might play additional roles that are yet discovered.
Pathways	Fumarase plays essential roles in both the citric acid cycle and DNA repair pathways. In the TCA cycle fumarase along with enzymes like malate dehydrogenase maintains efficient energy conversion in mitochondria. In DNA repair fumarase likely interacts with proteins such as p53 suggesting that fumarate has signaling roles impacting cell survival and replication.
Associated diseases and disorders	Mutations in the fumarase gene associate with hereditary leiomyomatosis and renal cell cancer (HLRCC). This disorder involves impaired fumarase function leading to abnormal cellular processes and tumor development. Fumarase deficiencies also connect to neurological disorders suggesting that its dysfunction has broad effects in cellular metabolism and genome stability linking it indirectly to other proteins within the affected 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

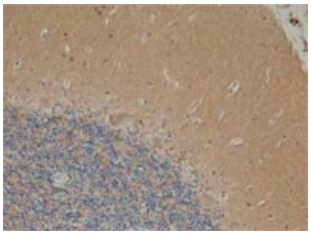
We do not recommend this combination. It is not covered by our product promise.

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.

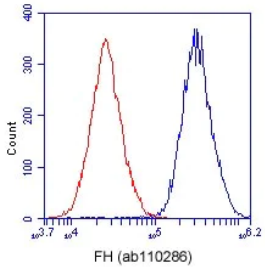
4 product images



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-FH/Fumarase antibody [8F12BB5] (ab110286)

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

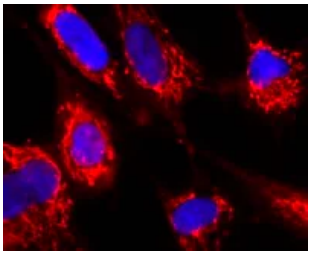
ab110286 staining FH/Fumarase in formalin-fixed, paraffin-embedded human cerebellum tissue by Immunohistochemistry at 5ug/ml. FH/Fumarase immunoactivity is most intense in neuronal cell bodies, most notably in the large Purkinje cells.



Flow Cytometry - Anti-FH/Fumarase antibody [8F12BB5] (ab110286)

FH/Fumarase Flow Cytometry staining using mouse Anti-FH/Fumarase antibody

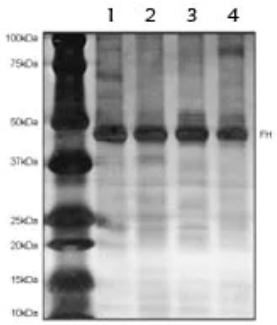
HeLa cells were stained with 1 µg/mL ab110286 (blue) or an equal amount of an isotype control antibody (red) and analyzed by flow cytometry.



Immunocytochemistry/ Immunofluorescence - Anti-FH/Fumarase antibody [8F12BB5] (ab110286)

FH/Fumarase Immunocytochemistry/ Immunofluorescence staining using mouse Anti-FH/Fumarase antibody

Immunocytochemistry image of FH/Fumarase (ab110286) stained human HDFn cells. The cells were paraformaldehyde fixed (4%, 20 min) and Triton X-100 permeabilized (0.1%, 15min). The cells were incubated with ab110286 at 5µg/ml for 2h at room temperature or over night at 4°C. The secondary antibody was (red) Alexa Fluor® 594 goat anti-mouse IgG (H+L) used at a 1/1000 dilution for 1h. 10% Goat serum was used as the blocking agent for all blocking steps. DAPI was used to stain the cell nuclei (blue). Target protein locates mainly in mitochondria.



Immunoprecipitation - Anti-FH/Fumarase antibody [8F12BB5] (ab110286)

FH/Fumarase immunocaptured from HepG2 cells (Lane 1), human liver mitochondria (Lane 2), bovine liver mitochondria (Lane 3), and rat liver mitochondria (Lane 4) using ab110286.
All lanes:
Immunoprecipitation - Anti-FH/Fumarase antibody [8F12BB5] (ab110286)

Predicted band size: 54 kDa

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