abcam

ab219414

Anti-Frataxin antibody [EPR21840]

Anti-Frataxin antibody [EPR21840] (ab219414) is a rabbit monoclonal antibody detecting Frataxin in **Western Blot, Flow Cytometry (Intra), IP, IHC-P, ICC/IF**. Suitable for **Human, Mouse, Rat**.

- Biophysical QC for unrivalled batch-batch consistency

Recombinant | RabMAb | 20ul selling size

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	EPR21840
Purification technique	Affinity purification Protein A
Specificity	We suggest optimizing experimental protocols (increasing lysate amount, using lower dilution or higher sensitivity ECL substrate) to improve results.
Concentration	0.825 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Mouse
Dilution info	1/30
Notes	-

Species	Human
Dilution info	1/30
Notes	-

Expected

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

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	1/1000
Notes	-

Species	Rat
Dilution info	1/1000
Notes	-

Species	Human
Dilution info	1/1000
Notes	-

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

ICC/IF

Tested

Species	Mouse
Dilution info	1/50
Notes	-

Species	Human
Dilution info	1/50
Notes	-

Expected

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

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/60
Notes	-

Expected

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

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

IHC-P

Tested

Species	Mouse
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Rat
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Species	Human
Dilution info	1/500
Notes	Perform heat-mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

Not recommended

Species	Recombinant fragment - Human
Dilution info	-
Notes	-

Target data

See full target information FXN

Function	Frataxin mature form. Functions as an activator of persulfide transfer to the scaffoding protein ISCU as component of the core iron-sulfur cluster (ISC) assembly complex and participates to the [2Fe-2S] cluster assembly (PubMed:12785837, PubMed:24971490). Accelerates sulfur transfer from NFS1 persulfide intermediate to ISCU and to small thiols such as L-cysteine and glutathione leading to persulfuration of these thiols and ultimately sulfide release (PubMed:24971490). Binds ferrous ion and is released from FXN upon the addition of both L-cysteine and reduced FDX2 during [2Fe-2S] cluster assembly (PubMed:29576242). The core iron-sulfur cluster (ISC) assembly complex is involved in the de novo synthesis of a [2Fe-2S] cluster, the first step of the mitochondrial iron-sulfur protein biogenesis. This process is initiated by the cysteine desulfurase complex (NFS1:LYRM4:NDUFAB1) that produces persulfide which is delivered on the scaffold protein ISCU in a FXN-dependent manner. Then this complex is stabilized by FDX2 which provides reducing equivalents to accomplish the [2Fe-2S] cluster assembly. Finally, the [2Fe-2S] cluster is transferred from ISCU to chaperone proteins, including HSCB, HSPA9 and GLRX5 (By similarity). May play a role in the protection against iron-catalyzed oxidative stress through its ability to catalyze the oxidation of Fe(2+) to Fe(3+); the oligomeric form but not the monomeric form has in vitro ferroxidase activity (PubMed:15641778). May be able to store large amounts of iron in the form of a ferrihydrite mineral by oligomerization; however, the physiological relevance is unsure as reports are conflicting and the function has only been shown using heterologous overexpression systems (PubMed:11823441, PubMed:12755598). May function as an iron chaperone protein that protects the aconitase [4Fe-4S]2+ cluster from disassembly and promotes enzyme reactivation (PubMed:15247478). May play a role as a high affinity iron binding partner for FECH that is capable of both delivering iron to ferrochelatase and mediating the terminal step in mitochondrial heme biosynthesis (PubMed:15123683, PubMed:16239244). Extramitochondrial frataxin. Modulates the RNA-binding activity of ACO1 (PubMed:20053667). May be involved in the cytoplasmic iron-sulfur protein biogenesis (PubMed:16091420). May contribute to oxidative stress resistance and overall cell survival (PubMed:16608849).

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

Storage information	Avoid freeze / thaw cycle

Notes

What is this antibody validated in?
Anti-Frataxin antibody [EPR21840] (ab219414) is a rabbit recombinant monoclonal antibody and is validated for use in Western Blot (WB), Flow Cytometry (Intra), Immunoprecipitation (IP), Immunohistochemistry (IHC-P), Immunocytochemistry/immunofluorescence (ICC/IF) in Human, Mouse, Rat samples.

What is the molecular weight of Frataxin?
Anti-Frataxin [EPR21840] (ab219414) specifically detects a band for Frataxin (UniProt: Q16595) at a molecular weight of 23kDa.

Other related products
We have a range of other formats of antibody clone [EPR21840] also available for your convenience: ab219414, Carrier free - ab236463, Alexa Fluor® 594 - ab303577, Alexa Fluor® 647 - ab303580, Alexa Fluor® 568 - ab312899, Alexa Fluor® 555 - ab314297

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.

Trial sizes available!
Test your antibody or perform pre-screening before committing to a larger quantity. Sold in 20µl. Discover our selection of trial-size antibodies.

Supplementary info

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

Activity summary	Frataxin often known by the alternate name FXN is a mitochondrial protein with a mass of approximately 21000 Dalton. It is expressed mainly in tissues with high energy demands like the heart liver and pancreas. Frataxin plays an important role in iron-sulfur cluster assembly which is essential for various cellular processes. The protein is a part of mitochondria where it regulates iron homeostasis and prevents oxidative damage by minimizing iron-induced free radical generation.
Biological function summary	Several cellular processes depend on the correct function of this protein. Frataxin assists in forming iron-sulfur clusters acting within a multiprotein complex in the

	mitochondria. The complex includes proteins such as ISCU which are involved in the assembly and repair of iron-sulfur clusters. These clusters are necessary for supporting mitochondrial electron transport and other fundamental metabolic pathways that require iron-sulfur dependencies.
Pathways	Frataxin's involvement extensively affects the mitochondrial respiratory chain and the mitochondrial biogenesis process. It plays a role in the electron transport chain by stabilizing iron-sulfur-containing complexes. NAB is one associated protein that interacts closely within these pathways sharing a connection through iron-sulfur cluster transportation and assembly systems. Efficient function of these pathways ensures a proper energetic output of cells.
Associated diseases and disorders	Frataxin mutations are directly linked to Friedreich's ataxia a neurodegenerative disease causing progressive damage to the nervous system. The deficiency or dysfunction in frataxin causes accumulation of iron in mitochondria leading to increased oxidative stress. Another related disorder includes heart disease which emerges due to the same oxidative stress pathway. Proteins such as Nfs1 are also involved sharing the responsibility with frataxin in scavenging excess iron protecting against related tissue damage.

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

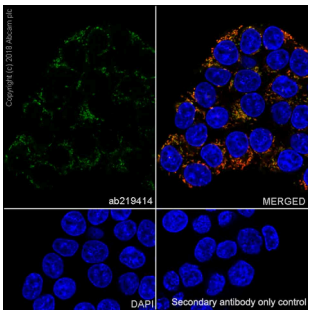
We do not recommend this combination. It is not covered by our product promise.

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.

12 product images



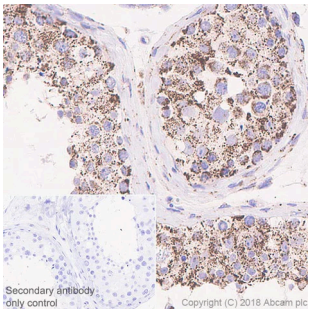
Immunocytochemistry/ Immunofluorescence - Anti-Frataxin antibody [EPR21840] (ab219414)

Frataxin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Frataxin antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized HCT 116 (human colorectal carcinoma epithelial cell) cells labeling Frataxin with ab219414 at 1/50 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green).
Confocal image showing mitochondrial staining in HCT 116 cell line.

Counterstained with ab33985 Anti-COX IV antibody - Mitochondrial Marker at a 1/1000 dilution followed by Goat Anti-Mouse IgG H&L (Alexa Fluor® 594) (ab150120) (orange). The nuclear counter stain is DAPI (blue).

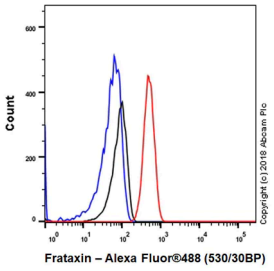
The negative control is the secondary antibody only.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Frataxin antibody [EPR21840] (ab219414)

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

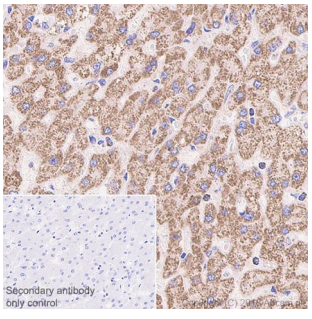
Immunohistochemical analysis of paraffin-embedded human testis tissue labeling Frataxin with ab219414 at 1/500 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Granular cytoplasmic staining in human testis (PMID: 18725397; PMID: 26035392) is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat-mediated antigen retrieval using ab93684 (Tris/EDTA buffer pH 9.0).



Flow Cytometry (Intracellular) - Anti-Frataxin antibody [EPR21840] (ab219414)

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

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed, 90% methanol-permeabilized HCT 116 (human colorectal carcinoma epithelial cell) cell line labeling Frataxin with ab219414 at 1/60 (red) compared with a rabbit monoclonal IgG (ab172730) (black) and an unlabeled control (cells without incubation with primary antibody and secondary antibody) (blue). Goat anti rabbit IgG (Alexa Fluor® 488, ab150077), at 1/2000 dilution was used as the secondary antibody.

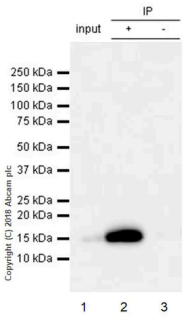


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Frataxin antibody [EPR21840] (ab219414)

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

Immunohistochemical analysis of paraffin-embedded human liver tissue labeling Frataxin with ab219414 at 1/500 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Granular

cytoplasmic staining in human liver (PMID: 18725397; PMID: 26035392) is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat-mediated antigen retrieval using ab93684 (Tris/EDTA buffer pH 9.0).



Immunoprecipitation - Anti-Frataxin antibody [EPR21840] (ab219414)

Frataxin was immunoprecipitated from 0.35 mg HCT 116 (human colorectal carcinoma epithelial cell) whole cell lysate with ab219414 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab219414 at 1/500 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/1000 dilution.

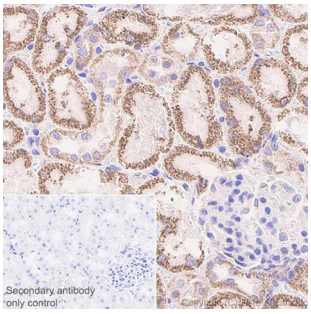
Lane 1: HCT 116 whole cell lysate 10 µg (Input).
Lane 2: ab219414 IP in HCT 116 whole cell lysate (+).
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab219414 in HCT 116 whole cell lysate (-).

Blocking/Dilution buffer and concentration: 5% NFDM/TBST.
Exposure time: 5 seconds.

All lanes:
Immunoprecipitation - Anti-Frataxin antibody [EPR21840] (ab219414)

Predicted band size: 13 kDa, 23 kDa

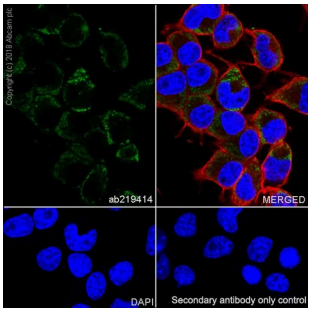
Observed band size: 17 kDa



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Frataxin antibody [EPR21840] (ab219414)

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

Immunohistochemical analysis of paraffin-embedded rat kidney tissue labeling Frataxin with ab219414 at 1/500 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Granular cytoplasmic staining in rat kidney (PMID: 18725397; PMID: 26035392) is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat-mediated antigen retrieval using ab93684 (Tris/EDTA buffer pH 9.0).



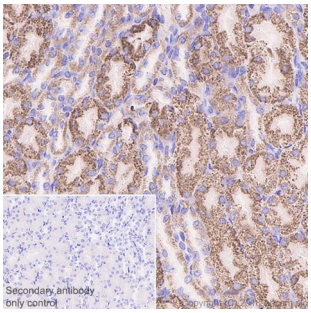
Immunocytochemistry/ Immunofluorescence - Anti-Frataxin antibody [EPR21840] (ab219414)

Frataxin Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Frataxin antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed, 0.1% Triton X-100 permeabilized Neuro-2a (mouse neuroblastoma cell line) cells labeling Frataxin with ab219414 at 1/50 dilution, followed by Goat Anti-Rabbit IgG H&L (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green).
Confocal image showing cytoplasmic staining in the Neuro-2a cell line.

Counterstained with ab195889 Anti-alpha Tubulin antibody [DM1A] - Microtubule Marker (Alexa Fluor® 594) at a 1/200 dilution (red). The nuclear counter stain is DAPI (blue).

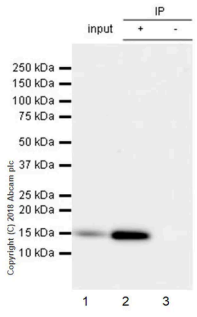
The negative control is the secondary antibody only.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Frataxin antibody [EPR21840] (ab219414)

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

Immunohistochemical analysis of paraffin-embedded mouse kidney tissue labeling Frataxin with ab219414 at 1/500 dilution, followed by a ready to use Goat Anti-Rabbit IgG H&L (HRP). Granular cytoplasmic staining in mouse kidney (PMID: 18725397; PMID: 26035392) is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody, secondary antibody is a ready to use Goat Anti-Rabbit IgG H&L (HRP).
Perform heat-mediated antigen retrieval using ab93684 (Tris/EDTA buffer pH 9.0).



Immunoprecipitation - Anti-Frataxin antibody [EPR21840] (ab219414)

Frataxin was immunoprecipitated from 0.35 mg Neuro-2a (mouse neuroblastoma cell line) whole cell lysate with ab219414 at 1/30 dilution. Western blot was performed from the immunoprecipitate using ab219414 at 1/500 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/1000 dilution.

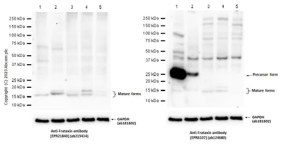
Lane 1: Neuro-2a whole cell lysate 10 µg (Input).
Lane 2: ab219414 IP in Neuro-2a whole cell lysate (+).
Lane 3: Rabbit monoclonal IgG (ab172730) instead of ab219414 in Neuro-2a whole cell lysate (-).

Blocking/Dilution buffer and concentration: 5% NFDM/TBST.
Exposure time: 30 seconds.

All lanes:
Immunoprecipitation - Anti-Frataxin antibody [EPR21840] (ab219414)

Predicted band size: 23 kDa

Observed band size: 14 kDa



Western blot - Anti-Frataxin antibody [EPR21840] (ab219414)

Frataxin Western blot staining using rabbit Anti-Frataxin antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.
This blot was developed using a high sensitivity ECL substrate. The high-sensitivity ECL substrate used allows for the detection of proteins in the mid-femtogram range.

ab219414 is not suitable for testing precursor form, we recommend ab124680 as an alternative for precursor form testing.

For different forms of frataxin, you can refer to PMID: 17468497, PMID: 31279523, PMID: 17468497 etc.

ab181602 was used as a loading control.
All lanes:
Western blot - Anti-Frataxin antibody [EPR21840] (ab219414) at 1/1000 dilution

Lane 1:
Human liver tissue lysate at 20 µg

Lane 2:
Human hippocampus tissue at 20 µg

Lane 3:
HCT116 (human colorectal carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 4:
Huh7 (human hepatocellular carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 5:
SH-SY5Y (human neuroblastoma epithelial cell) whole cell lysate at 20 µg

Secondary

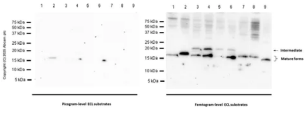
All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Developed using the ECL technique.

Predicted band size: 23 kDa

Observed band size: 14 kDa, 17 kDa

Exposure time: 60s



Western blot - Anti-Frataxin antibody [EPR21840] (ab219414)

Frataxin Western blot staining using rabbit Anti-Frataxin antibody

Blocking and diluting buffer and concentration: 5% NFDM/TBST.

The bands detected by this product are consistent with publications PMID: 18725397 and PMID: 20156111.

We suggest optimizing experimental protocols (increasing lysate amount, using lower dilution or higher sensitivity ECL substrate) to improve results when using ab197896 in western blot.

All lanes:
Western blot - Anti-Frataxin antibody [EPR21840] (ab219414) at 1/1000 dilution

Lane 1:
Human liver tissue lysate at 20 µg

Lane 2:
Mouse liver tissue lysate at 20 µg

Lane 3:
SW480 (human colorectal adenocarcinoma epithelial cell), whole cell lysate at 20 µg

Lane 4:
TF-1 (human Erythroleukemia erythroblast) whole cell lysate at 20 µg

Lane 5:
Huh7 (human hepatocellular carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 6:
HCT116 (human colorectal carcinoma epithelial cell) whole cell lysate at 20 µg

Lane 7:
Neuro-2a (mouse neuroblastoma neuroblast) whole cell lysate at 20 µg

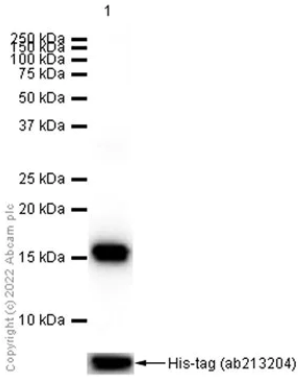
Lane 8:
RAW264.7 (mouse Abelson murine leukemia virus-induced tumor macrophage) whole cell lysate at 20 µg

Lane 9:
PC-12 (rat adrenal gland pheochromocytoma) whole cell lysate at 20 µg

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Observed band size: 14 kDa, 16 kDa, 19 kDa



Western blot - Anti-Frataxin antibody [EPR21840] (ab219414)

Blocking and diluting buffer and concentration: 5% NFDM/TBST. ab213204 was used as laoding control.
All lanes:
Western blot - Anti-Frataxin antibody [EPR21840] (ab219414) at 1/1000 dilution

All lanes:
His tagged Human FXN recombinant protein (aa 82-210) at 10 ng

Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/20000 dilution

Predicted band size: 23 kDa

Observed band size: 16 kDa

Exposure time: 3s

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