abcam

ab14715

Anti-SDHA antibody [2E3GC12FB2AE2]

Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715) is a mouse monoclonal antibody detecting SDHA in **Western Blot, Flow Cytometry, IHC-P, IHC-Fr**. Suitable for **Cow, Human, Mouse, Rat**.

- Clone 2E3GC12FB2AE2 is the most cited clone to SDHA
- KO validated for confirmed specificity
- Over 460 publications
- Trusted since 2004

KO Validated

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
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Clone number	2E3GC12FB2AE2
Purity	IgG fraction
Light chain type	kappa
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →
Purification notes	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

ICC

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Dog
Dilution info	-
Notes	-

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.

Expected

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

Predicted

Species	Dog
Dilution info	-
Notes	-

WB

Tested

Species	Mouse
Dilution info	0.1 µg/mL
Notes	-

Species	Rat
Dilution info	0.1 µg/mL
Notes	-

Species	Human
Dilution info	0.1 µg/mL
Notes	-

Species	Cow
Dilution info	0.1 µg/mL
Notes	-

Predicted

Species	Dog
Dilution info	-
Notes	-

IHC-P

Tested

Species	Human
Dilution info	-

Notes	-

Expected

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

Predicted

Species	Dog
Dilution info	-
Notes	-

IHC-Fr

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Predicted

Species	Dog
Dilution info	-
Notes	-

Target data

See full target information SDHA

Function	Flavoprotein (FP) subunit of succinate dehydrogenase (SDH) that is involved in complex II of the mitochondrial electron transport chain and is responsible for transferring electrons from succinate to ubiquinone (coenzyme Q) (PubMed:10746566, PubMed:24781757). SDH also oxidizes malate to the non-canonical enol form of oxaloacetate, enol-oxaloacetate (By similarity). Enol-oxaloacetate, which is a potent inhibitor of the succinate dehydrogenase activity, is further isomerized into keto-oxaloacetate (By similarity). Can act as a tumor suppressor (PubMed:20484225).

Storage

Shipped at conditions	Blue Ice
Appropriate short-term storage conditions	+4°C
Appropriate long-term storage conditions	+4°C

Notes

Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715) is a House Mouse Monoclonal antibody and is validated for use in Flow Cyt, ICC, IHC-Fr, IHC-P, WB in human, rat samples.

Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715) has been cited over 460 times in peer reviewed journals and is trusted by the scientific community.

Abcams high quality validation processes ensure Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715) has high sensitivity and specificity.

The specificity of Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715) has been confirmed by testing in knockout samples.

Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715) has 23 independent reviews from customers.

Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715) specifically detects SDHA (UniProt ID: P31039; Molecular weight: 68kDa) and is sold in 100 ug selling sizes.

Antibody clone 2E3GC12FB2AE2 is also available pre-conjugated to a variety of labels for your convenience - Alexa Fluor® 488, Alexa Fluor® 594, HRP (ab154473, ab17172, ab198493).

SDHA (FP), a subunit of succinate dehydrogenase, is a crucial mitochondrial enzyme involved in the Krebs cycle and electron transport chain. The SDHA molecular weight is approximately 72 kDa, and it plays a vital role in cellular energy production. The FP antibody is essential for studying SDHA's function and its role as a tumor suppressor. Abnormal SDHA levels are linked to various diseases, including hereditary paragangliomas, pheochromocytomas, and certain cancers. Monitoring SDHA can provide valuable insights into disease mechanisms and potential

therapeutic targets.

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	Succinate dehydrogenase complex flavoprotein subunit A (SDHA) also known as complex II Fp or SDH2 plays an important role in the mitochondrial electron transport chain and the tricarboxylic acid (TCA) cycle. It functions as a flavoprotein oxidoreductase catalyzing the oxidation of succinate to fumarate. With a molecular mass of approximately 72 kDa SDHA is expressed in the inner mitochondrial membrane of eukaryotic cells where it is a core component of the succinate dehydrogenase complex (SDHC). The complex is essential for cellular respiration and energy production.
Biological function summary	SDHA participates in the TCA cycle by accepting electrons from succinate which it donates to the coenzyme Q in the electron transport chain. This essential role connects SDHA to the regulation of ATP production in cells. SDHA operates as part of the larger succinate dehydrogenase (SDH) complex which includes other subunits such as SDHB SDHC and SDHD. This structurally integrated multisubunit complex influences mitochondrial integrity and cellular energy homeostasis.
Pathways	SDHA is deeply involved in the TCA cycle and oxidative phosphorylation pathway. As a part of these pathways it links to other critical enzymes such as fumarase and aconitase working in concert to drive the conversion of biochemical fuel into usable cellular energy. Its interactions with coenzyme Q and cytochrome complex enzymes are important for electron flow and proton gradient formation across the mitochondrial membrane. Such interactions are central to cellular respiration and energy generation.
Associated diseases and disorders	Mutations in SDHA correlate with various mitochondrial diseases and cancer syndromes. Specifically SDHA mutations have an association with Leigh syndrome and certain types of mitochondrial complex II deficiency. These mutations disrupt the function of the SDH complex causing metabolic imbalances and energy production issues. Furthermore the integral interaction of SDHA with other SDH subunits means that alterations can impact this entire enzymatic complex with implications for cellular respiration and disease progression.

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.

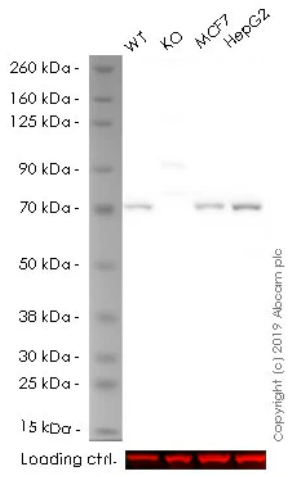
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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



Western blot - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

This data was developed using the same antibody clone in a different format (HRP conjugated) (ab198493).
Lanes 1 - 4: Merged signal (red and green). Green - ab198493 observed at 72 kDa. Red - loading control, ab181602, observed at 37 kDa.

ab198493 was shown to recognize in wild-type HEK-293 cells as signal was lost at the expected MW in SDHA knockout cells. Additional cross-reactive bands were observed in the wild-type and knockout cells. Wild-type and SDHA knockout samples were subjected to SDS-PAGE. The membrane was blocked with 3% Milk. ab198493 and ab181602 (Rabbit anti-GAPDH loading control) were incubated overnight at 4°C at 1/5000 dilution and 1/20000 dilution respectively. Blots were developed with Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed ab216773 and Goat anti-Rabbit IgG H&L (IRDye® 680RD) preabsorbed ab216777 secondary antibodies at 1/20000 dilution for 1 hour at room temperature before imaging.

All lanes:
Western blot - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715) at 1/5000 dilution

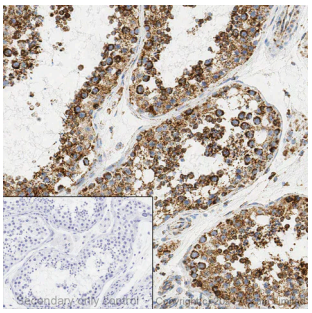
Lane 1:
Wild-type HEK-293 (human epithelial cell line from embryonic kidney) whole cell lysate at 20 µg

Lane 2:
SDHA knockout HEK-293 whole cell lysate at 20 µg

Lane 3:
MCF7 (human breast adenocarcinoma cell line) whole cell lysate at 20 µg

Lane 4:
HepG2 (human liver hepatocellular carcinoma cell line) whole cell lysate at 20 µg

Predicted band size: 72 kDa

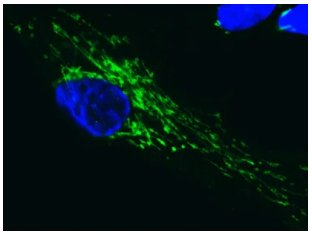


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

Immunohistochemical analysis of formalin fixed paraffin embedded human testis labelling SDHA with ab14715 at a concentration of 0.1µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with a OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was performed with DISCOVERY cell conditioning solution (CC1) 100°C, pH8.5 for 32mins.

ab14715 Anti-SDHA antibody [2E3GC12FB2AE2] was incubated for 16mins at 37°C. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.

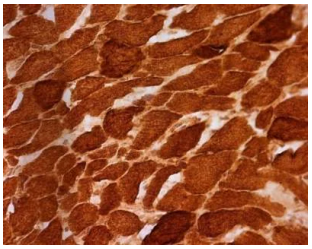
Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual).



Immunocytochemistry - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

SDHA Immunocytochemistry staining using mouse Anti-SDHA antibody

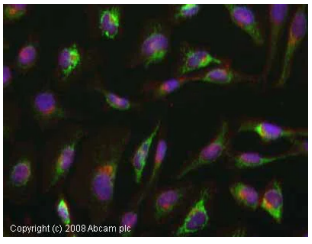
Mitochondrial localization of complex II visualized by immunocytochemistry using ab14715. Cultured human embryonic lung-derived fibroblasts (strain MRC5) were fixed, permeabilized and then labeled with ab14715 (0.2 µg/ml) followed by an AlexaFluor® 488-conjugated-goat-anti-mouse IgG2a isotype specific secondary antibody (2 µg/ml).



Immunohistochemistry (Frozen sections) - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

SDHA Immunohistochemistry (Frozen sections) staining using mouse Anti-SDHA antibody

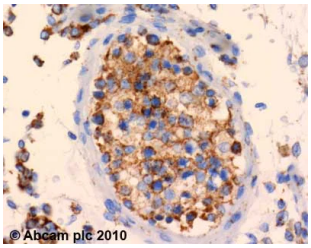
Human skeletal muscle immunohistochemistry using ab14715. Fixed frozen tissue sections from a patient with a single large deletion of the mtDNA were used. All muscle fibers exhibit complex II immunoreactivity, consistent with the nuclear DNA-encoded expression pattern of this and all other subunits of complex II.



Immunocytochemistry - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

SDHA Immunocytochemistry staining using mouse Anti-SDHA antibody

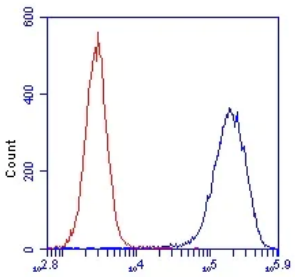
ICC/IF image of ab14715 stained human HeLa cells. The cells were 4% PFA fixed (10 min) and then incubated in 0.1% PBS-tween diluted 1%BSA (OR 10% goat serum OR 0.3M glycine) for 1h to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab14715, 5µg/ml) overnight at +4°C. The secondary antibody (green) was Alexa Fluor® 488 goat anti-mouse IgG (H+L) used at a 1/1000 dilution for 1h. Alexa Fluor® 594 WGA was used to label plasma membranes (red) at a 1/200 dilution for 1h. DAPI was used to stain the cell nuclei (blue). This antibody also gave a positive IF result in Hek293, HepG2 and MCF7 cells.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

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

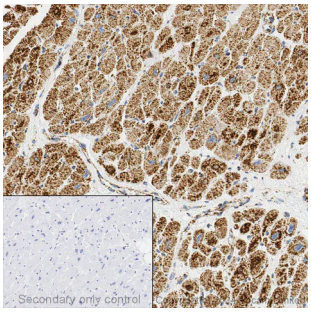
ab14715 (2µg/ml) staining SDHA in human testis using an automated system (DAKO Autostainer Plus). Using this protocol there is cytoplasmic and mitochondrial staining within the seminal vesicles.
Sections were rehydrated and antigen retrieved with the Dako 3 in 1 AR buffer EDTA pH 9.0 in a DAKO PT link. Slides were peroxidase blocked in 3% H2O2 in methanol for 10 mins. They were then blocked with Dako Protein block for 10 minutes (containing casein 0.25% in PBS) then incubated with primary antibody for 20 min and detected with Dako envision flex amplification kit for 30 minutes. Colorimetric detection was completed with Diaminobenzidine for 5 minutes. Slides were counterstained with Haematoxylin and coverslipped under DePeX. Please note that, for manual staining, optimization of primary antibody concentration and incubation time is recommended. Signal amplification may be required.



Flow Cytometry - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

SDHA Flow Cytometry staining using mouse Anti-SDHA antibody

HL-60 (human promyelocytic leukemia cell line) cells were stained with 1 µg/mL ab14715 (blue) or an equal amount of an isotype control antibody (red) and analyzed by flow cytometry.



Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

Immunohistochemical analysis of formalin fixed paraffin embedded human heart labelling SDHA with ab14715 at a concentration of 0.1µg/ml. The immunostaining was performed on a Ventana DISCOVERY ULTRA (Roche Tissue Diagnostics) instrument with a OptiView DAB IHC Detection Kit. Heat mediated antigen retrieval was performed with DISCOVERY cell conditioning solution (CC1) 100°C, pH8.5 for 32mins.

ab14715 Anti-SDHA antibody [2E3GC12FB2AE2] was incubated for 16mins at 37°C. Sections were counterstained with Hematoxylin II. Image inset shows absence of staining in secondary antibody only control.

Customers are encouraged to optimise antigen retrieval conditions, antibody concentration, incubation times and temperature for best results in their own IHC assay workflow (automated and manual).

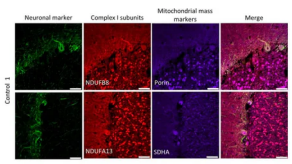


Image from Phillips J et al., Sci Rep. 2016 May 16;6:26013. Fig 4a doi: 10.1038/srep26013.

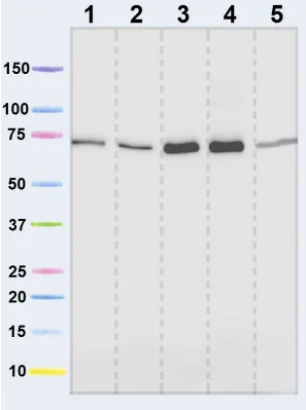
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

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

250 µm-thick formalin-fixed human cerebellum section were passively cleared using PACT and immunofluorescently labelled to identify mitochondrial mass (porin (ab14734, 1/100) and SDHA (ab14715, 1/100), 647 nm) and complex I subunits within the mitochondrial respiratory chain

Reproduced under the Creative Commons license http://creativecommons.org/licenses/by/4.0/.

(NDUFB8 (ab110242, 1/100) and NDUFA13 (ab110240, 1/100); 546 nm) in conjunction with a neuronal marker (NF-H; 488 nm) in control 1. Scale: 100 µm.



Western blot - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

All lanes:
Western blot - Anti-SDHA antibody [2E3GC12FB2AE2] (ab14715)

Lane 1:
Isolated mitochondria from Human heart at 5 µg

Lane 2:
Isolated mitochondria from Bovine heart at 4 µg

Lane 3:
Isolated mitochondria from Rat heart at 10 µg

Lane 4:
Isolated mitochondria from Mouse heart at 10 µg

Lane 5:
Isolated mitochondria from HepG2 (human liver hepatocellular carcinoma cell line) at 20 µg

Predicted band size: 72 kDa

Observed band size: 70 kDa

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