abcam

ab227993

Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free

Recombinant | RabMAb | KO Validated

Key facts

Isotype	IgG
Host species	Rabbit
Storage buffer	pH: 7.2 - 7.4 Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	The exact immunogen used to generate this antibody is proprietary information.
Carrier free	Yes
Clone number	EPR19392
Purification technique	Affinity purification Protein A
Concentration	1.013 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Mouse
Dilution info	-

Notes	-

Expected

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

WB

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	-
Notes	-

Expected

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

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	-
Notes	ab199376 - Rabbit monoclonal IgG (Low endotoxin, Azide free), is suitable for use as an isotype control with this antibody.

Expected

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

IHC-P

Tested

Species	Mouse, Rat, Human
Dilution info	-
Notes	-

Target data

See full target information APOE

Function

APOE is an apolipoprotein, a protein associating with lipid particles, that mainly functions in lipoprotein-mediated lipid transport between organs via the plasma and interstitial fluids (PubMed:14754908, PubMed:1911868, PubMed:6860692). APOE is a core component of plasma lipoproteins and is involved in their production, conversion and clearance (PubMed:14754908, PubMed:1911868, PubMed:1917954, PubMed:23620513, PubMed:2762297, PubMed:6860692, PubMed:9395455). Apolipoproteins are amphipathic molecules that interact both with lipids of the lipoprotein particle core and the aqueous environment of the plasma (PubMed:2762297, PubMed:6860692, PubMed:9395455). As such, APOE associates with chylomicrons, chylomicron remnants, very low density lipoproteins (VLDL) and intermediate density lipoproteins (IDL) but shows a preferential binding to high-density lipoproteins (HDL) (PubMed:1911868, PubMed:6860692). It also binds a wide range of cellular receptors including the LDL receptor/LDLR, the LDL receptor-related proteins LRP1, LRP2 and LRP8 and the very low-density lipoprotein receptor/VLDLR that mediate the cellular uptake of the APOE-containing lipoprotein particles (PubMed:12950167, PubMed:1530612, PubMed:1917954, PubMed:20030366, PubMed:20303980, PubMed:2063194,

PubMed:2762297, PubMed:7635945, PubMed:7768901, PubMed:8756331, PubMed:8939961). Finally, APOE also has a heparin-binding activity and binds heparan-sulfate proteoglycans on the surface of cells, a property that supports the capture and the receptor-mediated uptake of APOE-containing lipoproteins by cells (PubMed:23676495, PubMed:7635945, PubMed:9395455, PubMed:9488694). A main function of APOE is to mediate lipoprotein clearance through the uptake of chylomicrons, VLDLs, and HDLs by hepatocytes (PubMed:1911868, PubMed:1917954, PubMed:23676495, PubMed:29516132, PubMed:9395455). APOE is also involved in the biosynthesis by the liver of VLDLs as well as their uptake by peripheral tissues ensuring the delivery of triglycerides and energy storage in muscle, heart and adipose tissues (PubMed:2762297, PubMed:29516132). By participating in the lipoprotein-mediated distribution of lipids among tissues, APOE plays a critical role in plasma and tissues lipid homeostasis (PubMed:1917954, PubMed:2762297, PubMed:29516132). APOE is also involved in two steps of reverse cholesterol transport, the HDLs-mediated transport of cholesterol from peripheral tissues to the liver, and thereby plays an important role in cholesterol homeostasis (PubMed:14754908, PubMed:23620513, PubMed:9395455). First, it is functionally associated with ABCA1 in the biogenesis of HDLs in tissues (PubMed:14754908, PubMed:23620513). Second, it is enriched in circulating HDLs and mediates their uptake by hepatocytes (PubMed:9395455). APOE also plays an important role in lipid transport in the central nervous system, regulating neuron survival and sprouting (PubMed:25173806, PubMed:8939961). APOE is also involved in innate and adaptive immune responses, controlling for instance the survival of myeloid-derived suppressor cells (By similarity). Binds to the immune cell receptor LILRB4 (PubMed:30333625). APOE may also play a role in transcription regulation through a receptor-dependent and cholesterol-independent mechanism, that activates MAP3K12 and a non-canonical MAPK signal transduction pathway that results in enhanced AP-1-mediated transcription of APP (PubMed:28111074). (Microbial infection) Through its interaction with HCV envelope glycoprotein E2, participates in the attachment of HCV to HSPGs and other receptors (LDLr, VLDLr, and SR-B1) on the cell surface and to the assembly, maturation and infectivity of HCV viral particles (PubMed:25122793, PubMed:29695434). This interaction is probably promoted via the up-regulation of cellular autophagy by the virus (PubMed:29695434).

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

ab227993 is the carrier-free version of ab183597.

Conjugation ready
Our carrier-free antibodies are typically supplied in a PBS-only formulation, purified and free of BSA, sodium azide and glycerol. This conjugation-ready format is designed for use with fluorochromes, metal isotopes, oligonucleotides, and enzymes, which makes them ideal for antibody labelling, functional and cell-based assays, flow-based assays (e.g. mass cytometry) and Multiplex Imaging applications.

Use our conjugation kits for antibody conjugates that are ready-to-use in as little as 20 minutes with 1 minute hands-on-time and 100% antibody recovery: available for fluorescent dyes, HRP, biotin and gold.

Compatibility
This product is compatible with the Maxpar® Antibody Labeling Kit from Fluidigm, without the need for antibody preparation. Maxpar® is a trademark of Fluidigm Canada Inc.

What does low endotoxin mean?
Our low endotoxin, azide-free formats have low endotoxin level (1 EU/mg, determined by the TAL assay) and are free from azide, to achieve consistent experimental results in functional assays.

Supplementary info

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

Activity summary	Apolipoprotein E (ApoE) also known as apolipoprotein e or apoE is a major protein involved in lipid metabolism. It has an approximate molecular weight of 34 kDa. This protein is mainly produced in the liver and brain where it plays a critical role in transporting lipoproteins fat-soluble vitamins and cholesterol. ApoE exists in three common isoforms: ApoE2 ApoE3 and ApoE4 each having different impacts on lipid binding and metabolic processes. Scientists often use an ApoE ELISA kit to quantify this protein in various samples providing insights into its expression in health and disease.
Biological function summary	ApoE mediates the binding internalization and catabolism of these lipoprotein particles facilitating their interaction with specific cell-surface receptors such as the LDL receptor. This protein operates as part of a complex that includes various other apolipoproteins and lipid molecules. The study of mouse apoe using tools like a mouse apoe ELISA provides valuable data due to its similar physiological functions in lipid transport and metabolism.
Pathways	In the lipid metabolism pathway ApoE interacts with proteins such as the LDL receptor influencing the clearance of chylomicron remnants and VLDL from the bloodstream. In the cardiovascular disease pathway this protein impacts cholesterol levels and promotes plaques stabilization. ApoE's role in these pathways offers insights into its interaction with related proteins like apolipoprotein B and LDL receptor which are critical for maintaining lipid equilibrium.
Associated diseases and disorders	In Alzheimer’s disease ApoE4 isoform has a higher risk factor compared to ApoE3 and ApoE2 contributing to amyloid plaque formation through interactions with amyloid precursor protein. In cardiovascular diseases ApoE abnormalities influence atherosclerosis development with ApoE-deficient models showing increased susceptibility. ApoE's links to these diseases also connect it to other key proteins such as presenilin-1 in Alzheimer's disease and apolipoprotein B in cardiovascular disorders highlighting its extensive biological impact.

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

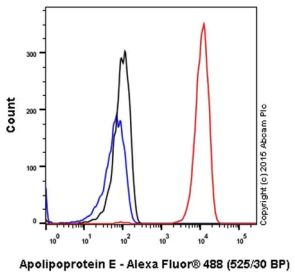
We do not recommend this combination. It is not covered by our product promise.

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.

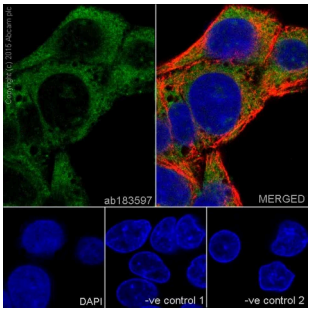
11 product images



Flow Cytometry (Intracellular) - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

Apolipoprotein E Flow Cytometry (Intracellular) staining using rabbit Anti-Apolipoprotein E antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed HepG2 (Human liver hepatocellular carcinoma cell line) cells labeling Apolipoprotein E with ab183597 at 1/70 dilution (red) compared with a Rabbit IgG, monoclonal - Isotype control (ab172730) (black) and an unlabelled control (cells without incubation with primary antibody and secondary antibody) (blue). Goat anti Rabbit IgG (Alexa Fluor® 488) at 1/500 dilution was used as the secondary antibody.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab183597).

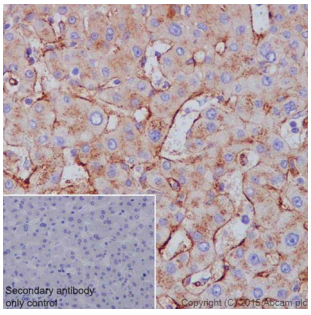


Immunocytochemistry/ Immunofluorescence - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

Apolipoprotein E Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-Apolipoprotein E antibody

Immunofluorescent analysis of 100% methanol-fixed HepG2 (Human liver hepatocellular carcinoma cell line) cells labeling Apolipoprotein E with ab183597 at 1/500 dilution followed by Goat anti-rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green). Confocal image showing cytoplasmic staining on HepG2 cell line. The nuclear counter stain is DAPI (blue). Tubulin is detected with Anti-alpha Tubulin antibody - Loading Control (ab7291) at 1/1000 dilution and Goat Anti-Mouse IgG (AlexaFluor®594) preadsorbed (ab150120) at 1/1000 dilution (red).
The negative controls are as follows:
-ve control 1: ab183597 at 1/500 dilution followed by ab150120 at 1/1000 dilution.
-ve control 2: ab7291 at 1/1000 dilution followed by ab150077 at 1/1000 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS BSA glycerol and sodium azide (ab183597).



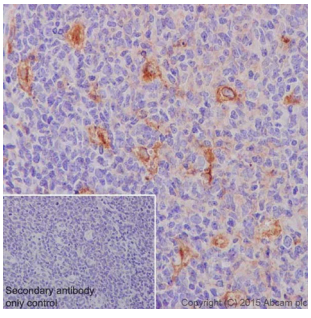
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

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

Immunohistochemical analysis of paraffin-embedded Human liver tissue labeling Apolipoprotein E with ab183597 at 1/2000 dilution followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasm staining on hepatocytes of Human liver is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS BSA glycerol and sodium azide (ab183597).

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



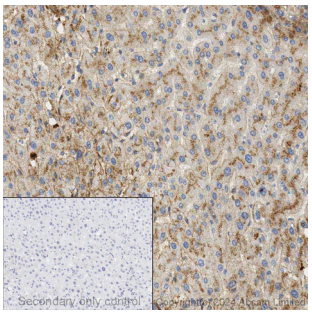
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

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

Immunohistochemical analysis of paraffin-embedded Human tonsil tissue labeling Apolipoprotein E with ab183597 at 1/2000 dilution followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasm staining on macrophages of Human tonsil is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS BSA glycerol and sodium azide (ab183597).

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.

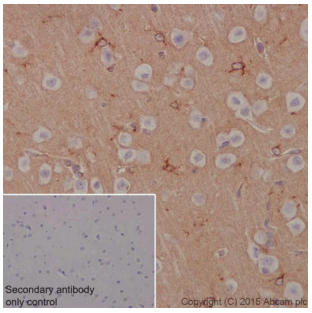


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab183597).
Immunohistochemical analysis of formalin fixed paraffin embedded human liver labelling Apolipoprotein E with ab183597 at a concentration of 0.1 µg/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, pH 8.5 for 32mins.

ab183597 anti- Apolipoprotein E [EPR19392] 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).



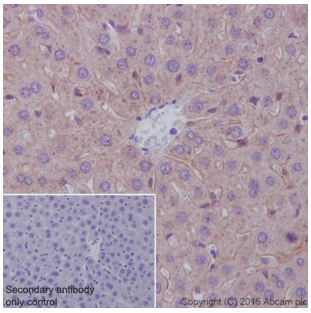
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

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

Immunohistochemical analysis of paraffin-embedded Rat cerebral cortex tissue labeling Apolipoprotein E with ab183597 at 1/4000 dilution followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasm staining on astrocytes of rat cerebral cortex is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS BSA glycerol and sodium azide (ab183597).

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



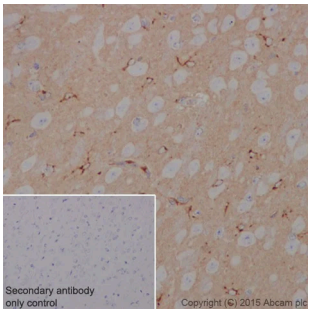
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

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

Immunohistochemical analysis of paraffin-embedded Rat liver tissue labeling Apolipoprotein E with ab183597 at 1/4000 dilution followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasm staining on hepatocytes of rat liver is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS BSA glycerol and sodium azide (ab183597).

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



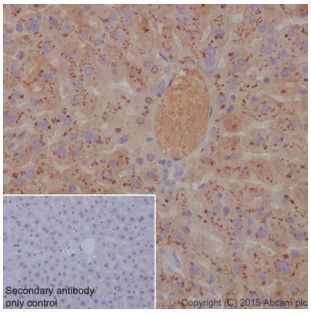
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

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

Immunohistochemical analysis of paraffin-embedded Mouse thalamus tissue labeling Apolipoprotein E with ab183597 at 1/4000 dilution followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasm staining on astrocytes of mouse thalamus is observed. Counter stained with Hematoxylin.
Secondary antibody only control: Used PBS instead of primary antibody secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

This data was developed using the same antibody clone in a different buffer formulation containing PBS BSA glycerol and sodium azide (ab183597).

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



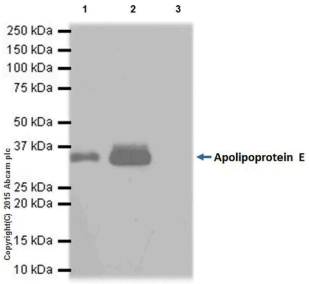
Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

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

This IHC data was generated using the same anti-Apolipoprotein E antibody clone EPR19392 in a different buffer formulation (cat# ab183597).
Immunohistochemical analysis of paraffin-embedded Mouse liver tissue labeling Apolipoprotein E with ab183597 at 1/4000 dilution followed by Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution. Cytoplasm staining on hepatocytes of mouse liver and plasma was also stained. Counter stained with Hematoxylin.

Secondary antibody only control: Used PBS instead of primary antibody secondary antibody is Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/500 dilution.

Perform heat mediated antigen retrieval with Tris/EDTA buffer pH 9.0 before commencing with IHC staining protocol.



Immunoprecipitation - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

Apolipoprotein E was immunoprecipitated from 1mg of Mouse plasma with ab183597 at 1/40 dilution. Western blot was performed from the immunoprecipitate using ab183597 at 1/2000 dilution. VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10000 dilution.
Lane 1: Mouse plasma, 10µg (Input).

Lane 2: ab183597 IP in Mouse plasma.

Lane 3: Rabbit IgG,monoclonal[EPR25A] - Isotype Control (ab172730) instead of ab183597 in Mouse plasma.

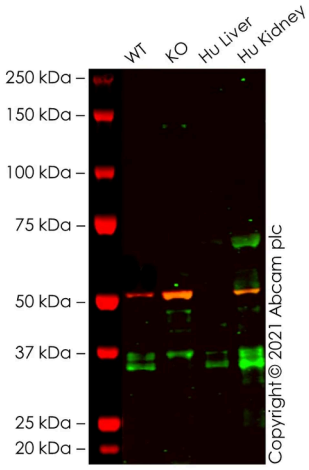
Blocking and dilution buffer and concentration: 5% NFDM/TBST.

Exposure time: 10 seconds.

This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab183597).

All lanes:
Immunoprecipitation - Anti-Apolipoprotein E antibody [EPR19392] (ab183597)

Predicted band size: 36 kDa



Western blot - Anti-Apolipoprotein E antibody [EPR19392] - Low endotoxin, Azide free (ab227993)

Apolipoprotein E Western blot staining using rabbit Anti-Apolipoprotein E antibody

False colour image of Western blot: Anti-Apolipoprotein E antibody [EPR19392] staining at 1/2000 dilution, shown in green; Mouse anti-Alpha Tubulin [DM1A] (ab7291) loading control staining at 1/20000 dilution, shown in red. In Western blot, ab183597 was shown to bind specifically to Apolipoprotein E. A band was observed at 34 kDa in wild-type HepG2 cell lysates with no signal observed at this size in APOE knockout cell line. To generate this image, wild-type and APOE knockout HepG2 cell lysates were analysed. First, samples were run on an SDS-PAGE gel then transferred onto a nitrocellulose membrane. Membranes were blocked in 5 % milk in TBS-0.1 % Tween® 20 (TBS-T) before incubation with primary antibodies overnight at 4 °C. Blots were washed four times in TBS-T, incubated with secondary antibodies for 1 h at room temperature, washed again four times then imaged. Secondary antibodies used were Goat anti-Rabbit IgG H&L (IRDye® 800CW) preabsorbed (ab216773) and Goat anti-Mouse IgG H&L (IRDye® 680RD) preabsorbed (ab216776) at 1/20000 dilution.
This data was developed using the same antibody clone in a different buffer formulation containing PBS, BSA, glycerol, and sodium azide (ab183597).

All lanes:
Western blot - Anti-Apolipoprotein E antibody [EPR19392] (ab183597) at 1/2000 dilution

Lane 1:
Wild-type HepG2 cell lysate at 20 µg

Lane 2:
APOE knockout HepG2 cell lysate at 20 µg

Lane 2:
Western blot - Human APOE knockout Hep G2 cell line (ab280875)

Lane 3:
Human Liver cell lysate at 20 µg

Lane 4:
Human Kidney cell lysate at 20 µg

Performed under reducing conditions.

Predicted band size: 36 kDa

Observed band size: 34 kDa

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