abcam

ab169861

Anti-Apolipoprotein E4 antibody [4E4]

Mouse Recombinant Monoclonal Apolipoprotein E (APOE4) antibody. Suitable for WB, I-ELISA, ICC/IF, Flow Cyt (Intra) and reacts with Human samples. Cited in 1 publication. Immunogen corresponding to Synthetic Peptide within Human APOE conjugated to Keyhole Limpet Haemocyanin.

Recombinant | 20ul selling size

Key facts

Isotype	IgG1
Host species	Mouse
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	Synthetic Peptide within Human APOE conjugated to Keyhole Limpet Haemocyanin. The exact immunogen used to generate this antibody is proprietary information. Database link P02649
Clone number	4E4
Purification technique	Affinity purification Protein A
Specificity	ab169861 is specific for Apolipoprotein E4. It shows no crossreactivity with Apolipoprotein E2 or Apolipoprotein E3.
Concentration	0.982 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

I-ELISA

Tested

Species	Human
Dilution info	1/1000
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

IHC-P

Not recommended

Species	Human, Mouse, Rat
Dilution info	-
Notes	-

IP

Not recommended

Species	Human, Mouse, Rat

Dilution info	-
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/50
Notes	-

Not recommended

Species	Mouse, Rat
Dilution info	-
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/1000
Notes	-

Not recommended

Species	Mouse, Rat
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 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

This product has switched from a hybridoma to recombinant production method on 20th June 2025

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	Apolipoprotein E4 often called ApoE4 is a member of the apolipoprotein family and plays an important role in lipid metabolism. As a 34-kDa protein it associates with lipoprotein particles and mediates receptor binding and clearance of these complexes. ApoE4 expresses mainly in the liver and the brain where it facilitates cholesterol and lipid transport and homeostasis. Other important alternative names for this protein include apo E4 and E4 peptide which identify specific functions related to its diverse roles in the body.
Biological function summary	ApoE4 is an important player in lipid transport and uptake facilitating the redistribution of lipids among cells. It forms part of a critical complex involved in binding to low-density lipoprotein receptors (LDLR) and the related protein family enabling efficient lipid delivery to peripheral tissues. The interaction of ApoE4 with these receptors directly influences cellular lipid balance impacting important cellular functions. Additionally its polymorphic nature allows the isoforms E2 E3 and E4 to differ in their impacts on lipid transport and disease risk.
Pathways	ApoE4 engages in the lipid and cholesterol transport pathways prominently impacting the reverse cholesterol transport process and the regulation of plasma lipoprotein metabolism. It interacts with proteins such as LDLR and LRP1

	influencing the removal of triglyceride-rich lipoproteins and modulating lipid levels in the circulation. ApoE4's involvement in these pathways highlights its role as a central regulator of lipid homeostasis.
Associated diseases and disorders	ApoE4 is closely associated with Alzheimer’s disease and cardiovascular disease highlighting its significance beyond lipid transport. ApoE4's isoform uniquely elevates the risk for Alzheimer's disease by potentially altering amyloid-beta metabolism and interfering with tau-associated pathologies making it a target of interest in neurodegenerative research. Additionally individuals bearing the ApoE4 allele exhibit an increased susceptibility to cardiovascular disorders due to its impact on cholesterol transport and clearance often linking it with elevated blood cholesterol levels. Through these diseases ApoE4 connects with other proteins like amyloid precursor protein (APP) and tau in Alzheimer's disease illustrating the broader implications of its biological functions.

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

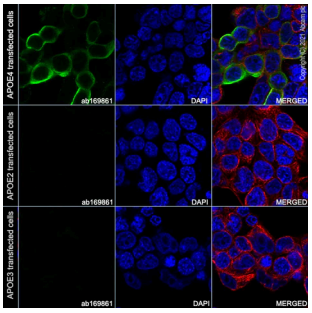
We do not recommend this combination. It is not covered by our product promise.

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.

6 product images



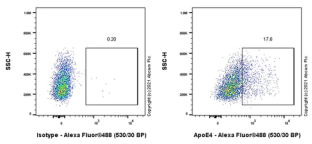
Immunocytochemistry/ Immunofluorescence - Anti-Apolipoprotein E4 antibody [4E4] (ab169861)

Apolipoprotein E4 Immunocytochemistry/ Immunofluorescence staining of HEK-293T cells transfected with a human APOE4(C112R) expression vector containing a myc tag using mouse Anti-Apolipoprotein E4 antibody

Immunofluorescent analysis of 4% Paraformaldehyde-fixed, 0.1% TritonX-100 permeabilized transfected 293T (human embryonic kidney epithelial cell) cells labelling Apolipoprotein E4 with ab169861 at 1/50 dilution, followed by ab150117 Goat Anti-Mouse IgG H&L (Alexa Fluor® 488) preadsorbed antibody at 1/1000 dilution(Green).

Confocal image showing cytoplamic staining in HEK-293T cells transfected with a human APOE4(C112R) expression vector containing a myc tag. (shown in green). The counterstain was observed in red. Nuclear DNA was labelled with DAPI (shown in blue).

ab179513 Anti-beta Tubulin rabbit monoclonal antibody was used to counter stain tubulin at a 1/200 dilution followed by ab150080 Goat Anti-Rabbit IgG H&L (Alexa Fluor® 594) at a 1/500 dilution (Red).

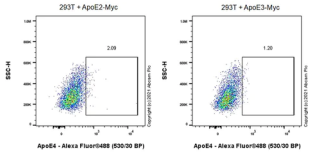


Flow Cytometry (Intracellular) - Anti-Apolipoprotein E4 antibody [4E4] (ab169861)

Apolipoprotein E4 Flow Cytometry (Intracellular) staining of HEK-293T (human embryonic kidney) transfected with Apolipoprotein E4 (C130R) expression vector containing a myc-His-tag® using mouse Anti-Apolipoprotein E4 antibody

Flow cytometric analysis of 4% paraformaldehyde fixed, 90% methanol permeabilized HEK-293T (human embryonic kidney) transfected with Apolipoprotein E4 (C130R) expression vector containing a myc-His-tag® cells labelling Apolipoprotein E4 with ab169861 at 1/1000 dilution (0.1 µg) / Right compared with a Mouse monoclonal IgG / Left isotype control

Goat anti-Mouse IgG (Alexa Fluor® 488, ab150113) was used as a secondary antibody at a 1/2000 dilution.

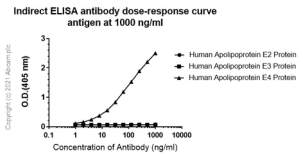


Flow Cytometry (Intracellular) - Anti-Apolipoprotein E4 antibody [4E4] (ab169861)

Apolipoprotein E4 Flow Cytometry (Intracellular) staining using mouse Anti-Apolipoprotein E4 antibody

Flow cytometric analysis of 4% paraformaldehyde fixed, 90% methanol permeabilized HEK-293T transfected with Apolipoprotein E2 (R176C) expression vector containing a myc-His-tag® (Left) / HEK-293T transfected with Apolipoprotein E3 expression vector containing a myc-His-tag® (Right) cells labelling Apolipoprotein E4 with ab169861 at 1/1000 dilution (0.1 µg).

Goat anti-Mouse IgG (Alexa Fluor® 488, ab150113) was used as a secondary antibody at a 1/2000 dilution.
No cross-reactivity with ApoE2 and ApoE3.

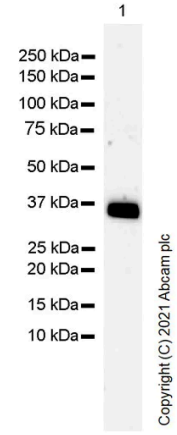


Indirect ELISA - Anti-Apolipoprotein E4 antibody [4E4] (ab169861)

Indirect ELISA analysis of ab169861 at 1000-0 ng/ml. The Secondary antibody used was Alkaline Phosphatase-conjugated AffiniPure Goat Anti-Mouse IgG (H+L) at 1/1000 dilution.

Antigen: Human Apolipoprotein E2 Protein, Human Apolipoprotein E3 Protein, Human Apolipoprotein E4 Protein.

Antigen concentration: 1000 ng/ml



Western blot - Anti-Apolipoprotein E4 antibody [4E4] (ab169861)

Apolipoprotein E4 Western blot staining of Human plasma using mouse Anti-Apolipoprotein E4 antibody

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

All lanes:
Western blot - Anti-Apolipoprotein E4 antibody [4E4] (ab169861) at 1/1000 dilution

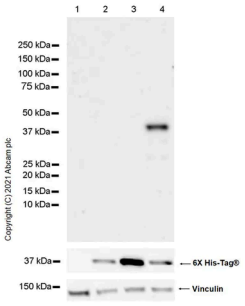
All lanes:
Human plasma at 5 µL

Secondary

All lanes:
Peroxidase-Conjugated Goat anti-Mouse IgG (H+L) at 1/10000 dilution

Observed band size: 37 kDa

Exposure time: 3min



Western blot - Anti-Apolipoprotein E4 antibody [4E4] (ab169861)

Apolipoprotein E4 Western blot staining using mouse Anti-Apolipoprotein E4 antibody

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

All lanes:
Western blot - Anti-Apolipoprotein E4 antibody [4E4] (ab169861) at 1/2000 dilution

Lane 1:
HEK-293T (human embryonic kidney) transfected with an empty vector (vector control), containing a myc-His-tag®, whole cell lysate at 2 µg

Lane 2:
HEK-293T transfected with Apolipoprotein E2 (R176C) expression vector containing a myc-His-tag®, whole cell lysate at 2 µg

Lane 3:
HEK-293T transfected with Apolipoprotein E3 expression vector containing a myc-His-tag®, whole cell lysate at 2 µg

Lane 4:
HEK-293T transfected with Apolipoprotein E4 (C130R) expression vector containing a myc-His-tag®, whole cell lysate at 2 µg

Secondary

All lanes:
Peroxidase-Conjugated Goat anti-Mouse IgG (H+L) at 1/50000 dilution

Observed band size: 37 kDa

Exposure time: 81s

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