abcam

ab209899

Anti-AKR1C3+AKR1C4 antibody [EPR16726]

Recombinant | RabMAb

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	EPR16726
Purification technique	Affinity purification Protein A
Concentration	0.413 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IP

Tested

Species	Human
Dilution info	1/30
Notes	-

WB

Tested

Species	Human
Dilution info	1/1000
Notes	-

ICC/IF

Tested

Species	Human
Dilution info	1/100
Notes	-

Flow Cyt (Intra)

Tested

Species	Human
Dilution info	1/70
Notes	-

Target data

See full target information AKR1C3

Function

Cytosolic aldo-keto reductase that catalyzes NADPH-dependent reduction of ketosteroids to hydroxysteroids. Displays broad substrate specificity with distinct positional and stereochemistry, primarily generating 17beta-hydroxysteroids, but also 3alpha- and 20alpha-hydroxysteroids (PubMed:10998348, PubMed:11165022, PubMed:20036328, PubMed:9415401, PubMed:9927279, PubMed:10998348, PubMed:9927279). Produces potent androgens via classical and 'backdoor'/alternative pathways. In the classical androgen metabolic pathway (biosynthesis of 5alpha-dihydrotestosterone (5alpha-DHT) via testosterone), catalyzes the reduction of delta4-androstenedione to form testosterone (PubMed:10998348, PubMed:11165022, PubMed:20036328, PubMed:9415401, PubMed:9927279). In the 'backdoor' androgen metabolic pathway (biosynthesis of 5alpha-dihydrotestosterone (5alpha-DHT) via pregnanes), reduces androsterone to 5alpha-androstane-3alpha,17beta-diol preceding 5alpha-DHT secretion (PubMed:10557352, PubMed:10998348, PubMed:9415401). Reduces 5alpha-DHT to less potent androgen 5alpha-androstane-3alpha,17beta-diol, likely regulating ligand availability for androgen receptors (PubMed:10557352, PubMed:10998348,

PubMed:11165022, PubMed:14672942, PubMed:7650035, PubMed:9415401). May contribute to the metabolism of adrenal-derived androgen precursors. Reduces 11-keto-4-androstene-3,17-dione (11KA4) and 11-keto-5alpha-androstane-3,17-dione (11K-Adione) into potent androgens 11-ketotestosterone (11KT) and 11-ketodihydrotestosterone (11KDHT), respectively (PubMed:31926269). In estrogen metabolism, catalyzes the conversion of estrone to potent estrogen 17beta-estradiol (PubMed:10998348, PubMed:11165022, PubMed:20036328). Acts as a prostaglandin (PG) F2alpha synthase. Displays 11-ketoreductase and 9,11-endoperoxide reductase activities and reduces PGD2 to 11beta-PGF2alpha and PGH2 to PGF2alpha (PubMed:10622721, PubMed:11165022, PubMed:15047184, PubMed:19010934, PubMed:20036328, PubMed:7650035, PubMed:9415401, PubMed:9927279). Also displays retinaldehyde reductase activity toward 9-cis-retinal (PubMed:21851338). In vitro can efficiently catalyze bidirectional conversion between ketosteroids and hydroxysteroids using NADPH/NADP(+) or NADH/NAD(+) as cofactors. In vivo however, the reductase activity prevails since the major reducing cofactor NADPH inhibits NAD(+)-dependent oxidase activity (PubMed:11165022, PubMed:14672942). In addition, it is able to reduce in vitro various carbonyl compounds like menadione, phenanthrenequinone and nitrobenzaldehyde (By similarity).

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

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.

Supplementary info

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

Activity summary	The proteins AKR1C3 and AKR1C4 also known as Aldo-Keto Reductase Family 1 Member C3 and C4 are reductases involved in the metabolism of steroids prostaglandins and xenobiotics. AKR1C3 has a molecular mass of approximately 37 kDa while AKR1C4 is slightly larger at around 37.2 kDa. These proteins are expressed mainly in the liver but you can also find AKR1C3 in adrenal glands and prostate tissues. Current research shows their functions in enzymatic reduction processes significantly affect hormone conversion and lipid metabolism.
Biological function summary	The proteins AKR1C3 and AKR1C4 have significant roles in steroid hormone metabolism. They do not form a part of any larger complex but act independently to catalyze the conversion of active androgens and estrogens. AKR1C3 for example converts androstenedione to testosterone and estrone to estradiol affecting steroid balance in tissues. Meanwhile AKR1C4 primarily catalyzes the reduction of bile acid intermediates assisting in maintaining liver health and function.
Pathways	AKR1C3 and AKR1C4 operate closely in metabolic pathways involving steroid metabolism and bile acid biosynthesis. In the steroid metabolism pathway they associate with other enzymes like 5α-reductase and CYP19A1 (aromatase) to regulate the conversion and amplification of steroid hormones. In bile acid biosynthesis AKR1C4 works conjointly with enzymes like CYP7A1 playing a significant role in processing cholesterol substrates into bile acids important for lipid digestion and absorption.
Associated diseases and disorders	AKR1C3 and AKR1C4 have associations with conditions such as prostate cancer and liver disease. AKR1C3's upregulation correlates with prostate cancer progression by influencing androgen receptor activation. It relates to enzymes like CYP17A1 which share involvement in androgen biosynthesis. Meanwhile AKR1C4 plays a role in liver diseases such as cholestasis and is thought to interact with proteins involved in bile transport and synthesis potentially impacting pathological bile acid accumulation. Understanding these interactions helps inform therapeutic strategies targeting hormone and bile acid-related disorders.

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.

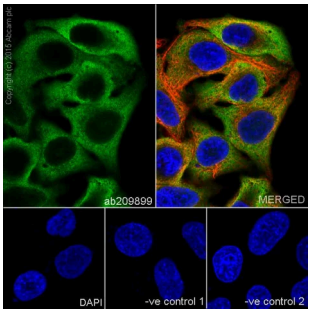
We are dedicated to supporting your work with high quality reagents and we are here for you every step of the way should you need us.

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.

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7 product images



Immunocytochemistry/ Immunofluorescence - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899)

AKR1C3+AKR1C4 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-AKR1C3+AKR1C4 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed 0.1% Triton X-100 permeabilized A549 (Human lung carcinoma cell line) cells labeling AKR1C3 with ab209899 at 1/100 dilution followed by Goat anti-Rabbit IgG (Alexa Fluor® 488) (ab150077) secondary antibody at 1/1000 dilution (green).
Confocal image showing cytoplasmic staining on A549 cell line.

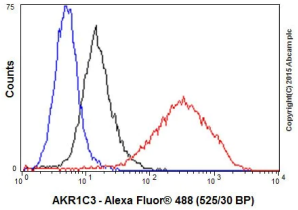
The nuclear counterstain is DAPI (blue).

Tubulin is detected with Anti-alpha Tubulin antibody - Loading Control (ab7291) at 1/1000 dilution and Goat Anti-Mouse IgG (Alexa Fluor®594) preadsorbed (ab150120) at 1/1000 dilution (red).

The negative controls are as follows:-

-ve control 1: ab209899 at 1/100 dilution followed by ab150120 at 1/1000 dilution.

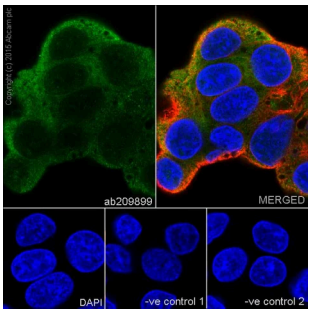
-ve control 2: ab7291 at 1/1000 dilution followed by ab150077 at 1/1000 dilution.



Flow Cytometry (Intracellular) - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899)

AKR1C3+AKR1C4 Flow Cytometry (Intracellular) staining using rabbit Anti-AKR1C3+AKR1C4 antibody

Intracellular flow cytometric analysis of 4% paraformaldehyde-fixed A549 (Human lung carcinoma cell line) cells labeling AKR1C3with ab209899 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.



Immunocytochemistry/ Immunofluorescence - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899)

AKR1C3+AKR1C4 Immunocytochemistry/ Immunofluorescence staining using rabbit Anti-AKR1C3+AKR1C4 antibody

Immunofluorescent analysis of 4% paraformaldehyde-fixed 0.1% Triton X-100 permeabilized HepG2 (Human liver hepatocellular carcinoma cell line) cells labeling AKR1C3 with ab209899 at 1/100 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.

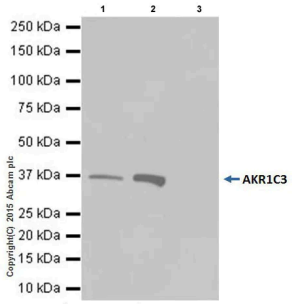
The nuclear counterstain is DAPI (blue).

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: ab209899 at 1/100 dilution followed by ab150120 at 1/1000 dilution.

-ve control 2: ab7291 at 1/1000 dilution followed by ab150077 at 1/1000 dilution.



Immunoprecipitation - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899)

AKR1C3 was immunoprecipitated from 1mg of HepG2 (Human liver hepatocellular carcinoma cell line) whole cell lysate with ab209899 at 1/30 dilution.
Western blot was performed from the immunoprecipitate using ab209899 at 1/1000 dilution.

VeriBlot for IP Detection Reagent (HRP) (ab131366), was used for detection at 1/10000 dilution.

Lane 1: HepG2 whole cell lysate, 10µg (Input).

Lane 2: ab209899 IP in HepG2 whole cell lysate.

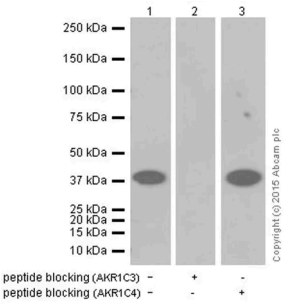
Lane 3: Rabbit IgG,monoclonal - Isotype Control (ab172730) instead of ab209899 in HepG2 whole cell lysate.

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

Exposure time: 1 second.

All lanes:
Immunoprecipitation - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899)

Predicted band size: 37 kDa



Western blot - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899)

AKR1C3+AKR1C4 Western blot staining using rabbit Anti-AKR1C3+AKR1C4 antibody

Blocking/Dilution buffer: 5% NFDM/TBST.
All lanes:
Western blot - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899) at 1/2000 dilution

Lane 1:
HepG2 (Human liver hepatocellular carcinoma cell line) whole cell lysate (control) at 10 µg

Lane 2:
HepG2 (Human liver hepatocellular carcinoma cell line) whole cell lysate at 10 µg with AKR1C3 peptide on the membrane

Lane 3:
HepG2 (Human liver hepatocellular carcinoma cell line) whole cell lysate at 10 µg with AKR1C4 peptide on the membrane

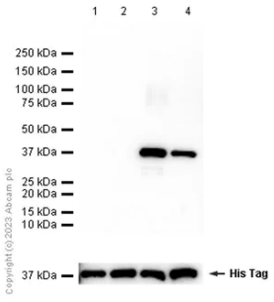
Secondary

All lanes:
Western blot - Goat Anti-Rabbit IgG H&L (HRP) (ab97051) at 1/100000 dilution

Predicted band size: 37 kDa

Observed band size: 37 kDa

Exposure time: 3min



Western blot - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899)

Blocking and dilution buffer: 5% NFDM/TBST
Lanes 1 - 4:
Western blot - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899) at 1/1000 dilution

Lanes 1 - 4:
Western blot - Anti-AKR1C3+AKR1C4 antibody [EPR16726] - BSA and Azide free (ab251511) at 1/1000 dilution

Lane 1:
His-tagged human AKR1C1 recombinant protein, full-length

Lane 2:
His-tagged human AKR1C2 recombinant protein, full-length

Lane 3:
His-tagged human AKR1C3 recombinant protein, full-length

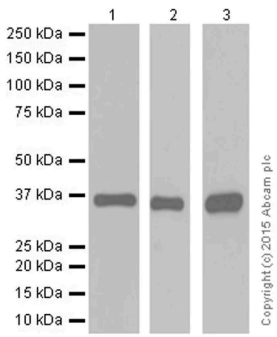
Lane 4:
His-tagged human AKR1C4 recombinant protein, full-length

Secondary

All lanes:
Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/20000 dilution

Observed band size: 39 kDa

Exposure time: 10s



Western blot - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899)

AKR1C3+AKR1C4 Western blot staining using rabbit Anti-AKR1C3+AKR1C4 antibody

Blocking/Dilution buffer: 5% NFDM/TBST.
Exposure time: Lane 1/3: 2 seconds; Lane 2: 30 seconds.

Lanes 1 - 2:
Western blot - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899) at 1/1000 dilution

Lane 3:
Western blot - Anti-AKR1C3+AKR1C4 antibody [EPR16726] (ab209899) at 1/5000 dilution

Lane 1:
Human fetal kidney lysate at 20 µg

Lane 2:
MOLT-4 (Human lymphoblastic leukemia cell line) whole cell lysate at 20 µg

Lane 3:
A549 (Human lung carcinoma cell line) whole cell lysate at 20 µg

Secondary

All lanes:
Goat Anti-Rabbit IgG Peroxidase Conjugate, specific to the non-reduced form of IgG at 1/10000 dilution

Predicted band size: 37 kDa, 90 kDa

Observed band size: 37 kDa

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