abcam

ab22717

Anti-Cytochrome P450 1A2 antibody [d15 (16VII F10F12)]

Key facts

Isotype	IgG1
Host species	Mouse
Storage buffer	Preservative: 0.02% Sodium azide Constituents: PBS
Form	Liquid
Clonality	Monoclonal
Immunogen	Full Length Protein corresponding to Rat Cyp1a2. The exact immunogen used to generate this antibody is proprietary information. Database link P04799
Clone number	d15 (16VII F10F12)
Purification technique	Affinity purification Protein A/G
Specificity	This antibody cross reacts with CYP 1A1. This antibody does not react with rat CYP 2A1, 2B1, 2B2, 2C6, 2C7, 2C11, 4A1, 4A2 and 4A3.
Concentration	1 mg/mL The concentration of this product may be batch-dependent Batch concentration finder →

Reactivity data

IHC-P

Tested

Species	Human
Dilution info	4 µg/mL
Notes	

Perform heat-mediated antigen retrieval with citrate buffer pH 6 before commencing with IHC staining protocol.

Expected

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

Flow Cyt

Tested

Species	Human
Dilution info	1 µg for 10^6 Cells
Notes	ab170190 - Mouse monoclonal IgG1, is suitable for use as an isotype control with this antibody.

Expected

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

WB

Tested

Species	Mouse, Rat
Dilution info	-
Notes	-

Expected

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

ICC/IF

Tested

Species	Human
Dilution info	1-5 µg/mL
Notes	-

Expected

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

Target data

See full target information Cyp1a2

Function

A cytochrome P450 monooxygenase involved in the metabolism of various endogenous substrates, including fatty acids, steroid hormones and vitamins. Mechanistically, uses molecular oxygen inserting one oxygen atom into a substrate, and reducing the second into a water molecule, with two electrons provided by NADPH via cytochrome P450 reductase (NADPH--hemoprotein reductase). Catalyzes the hydroxylation of carbon-hydrogen bonds. Exhibits high catalytic activity for the formation of hydroxyestrogens from estrone (E1) and 17beta-estradiol (E2), namely 2-hydroxy E1 and E2. Metabolizes cholesterol toward 25-hydroxycholesterol, a physiological regulator of cellular cholesterol homeostasis. May act as a major enzyme for all-trans retinoic acid biosynthesis in the liver. Catalyzes two successive oxidative transformation of all-trans retinol to all-trans retinal and then to the active form all-trans retinoic acid. Primarily catalyzes stereoselective epoxidation of the last double bond of polyunsaturated fatty acids (PUFA), displaying a strong preference for the (R,S) stereoisomer. Catalyzes bisallylic hydroxylation and omega-1 hydroxylation of PUFA. May also participate in eicosanoids metabolism by converting hydroperoxide species into oxo metabolites (lipoxygenase-like reaction, NADPH-independent). Plays a role in the oxidative metabolism of xenobiotics. Catalyzes the N-hydroxylation of heterocyclic amines and the O-deethylation of phenacetin. Metabolizes caffeine via N3-demethylation.

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

Isotype
IgG1/IgG2a kappa

Supplementary info

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

Activity summary	Cytochrome P450 1A2 often known as CYP1A2 is an important enzyme in the cytochrome P450 superfamily with a known mass around 58 kDa. It is mainly expressed in the liver where it functions in the metabolism of drugs and the bioactivation of various compounds. CYP1A2 also participates in the oxidation of small organic molecules which include xenobiotics and endogenous substrates. Due to its function researchers frequently study CYP1A2 substrates and its inhibitors to understand better its role in drug metabolism and toxicity.
Biological function summary	CYP1A2 plays a central role in the oxidative biotransformation of drugs and procarcinogens. It does not form part of a larger complex but interacts dynamically with other enzymes in the detoxification process. CYP1A2 metabolizes several clinical drugs such as caffeine and theophylline and regulates the detoxification of aromatic amines and hydrocarbons. Studying CYP1A2 inhibitors can provide insights into clinically relevant drug interactions and potential side effects in pharmacotherapy.
Pathways	CYP1A2 functions within the drug metabolism and synthesis of cholesterol steroids and other lipids pathways. In the drug metabolism pathway CYP1A2 works alongside other cytochrome P450 enzymes such as CYP1A1 and CYP1B1 which together ensure the metabolism and clearance of various exogenous and endogenous compounds. These pathways are vital for maintaining drug efficacy and preventing toxicity through the metabolic clearance of pharmaceutical agents and harmful substances.
Associated diseases and disorders	CYP1A2 activity links to liver disorders and certain cancers. Altered enzyme activity may lead to hepatotoxicity a condition that arises from excessive accumulation of active drug metabolites in the liver. Furthermore due to its role in activating

procarcinogens increased CYP1A2 activity relates to a higher risk of developing certain cancers including liver cancer. Researchers often explore these connections to better understand the enzyme's role in disease pathogenesis and to develop CYP1A2-directed therapies.

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

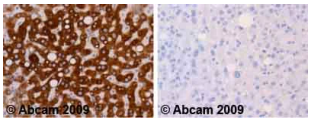
We do not recommend this combination. It is not covered by our product promise.

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.

5 product images

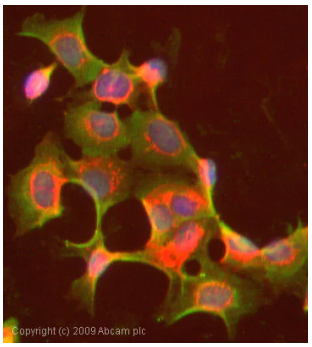


Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) - Anti-Cytochrome P450 1A2 antibody [d15 (16VII F10F12)] (ab22717)

Cytochrome P450 1A2 Immunohistochemistry (Formalin/PFA-fixed paraffin-embedded sections) staining using mouse Anti-Cytochrome P450 1A2 antibody

ab22717 staining human normal liver. Staining is localised to the cytoplasm.
Left panel: with primary antibody at 1 ug/ml. Right panel: isotype control.
Sections were stained using an automated system DAKO Autostainer Plus , at room temperature. Sections were rehydrated and antigen retrieved with the Dako 3-in-1 antigen retrieval buffer citrate pH 6.0 in a DAKO PT Link. Slides were peroxidase blocked in 3% H2O2 in methanol for 10 minutes. They were then blocked with Dako Protein block for 10 minutes (containing casein 0.25% in PBS) then incubated with primary antibody for 20 minutes and detected with Dako Envision Flex amplification kit for 30 minutes. Colorimetric detection was completed with diaminobenzidine for

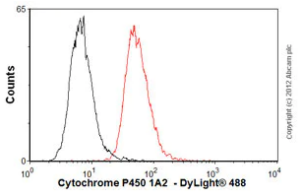
5 minutes. Slides were counterstained with Haematoxylin and coverslipped under DePeX. Please note that for manual staining we recommend to optimize the primary antibody concentration and incubation time (overnight incubation), and amplification may be required.



Immunocytochemistry/ Immunofluorescence - Anti-Cytochrome P450 1A2 antibody [d15 (16VII F10F12)] (ab22717)

Cytochrome P450 1A2 Immunocytochemistry/ Immunofluorescence staining using mouse Anti-Cytochrome P450 1A2 antibody

ICC/IF image of ab22717 stained MCF7 cells. The cells were 100% methanol fixed (5 min) and then incubated in 1%BSA / 10% normal goat serum / 0.3M glycine in 0.1% PBS-Tween for 1h to permeabilise the cells and block non-specific protein-protein interactions. The cells were then incubated with the antibody (ab22717, 1µg/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) at a concentration of 1.43µM.



Flow Cytometry - Anti-Cytochrome P450 1A2 antibody [d15 (16VII F10F12)] (ab22717)

Cytochrome P450 1A2 Flow Cytometry staining using mouse Anti-Cytochrome P450 1A2 antibody

Overlay histogram showing MCF7 cells stained with ab22717 (red line). The cells were fixed with 80% methanol (5 min) and then permeabilized with 0.1% PBS-Tween for 20 min. The cells were then incubated in 1x PBS / 10% normal goat serum / 0.3M glycine to block non-specific protein-protein interactions followed by the antibody (ab22717, 1µg/1x10^6 cells) for 30 min at 22°C. The secondary antibody used was DyLight® 488 goat anti-mouse IgG (H+L) (ab96879) at 1/500 dilution for 30 min at 22°C. Isotype control antibody (black line) was mouse IgG1 [ICIGG1] (ab91353, 2µg/1x10^6 cells) used under the same conditions. Acquisition of >5,000 events was performed.

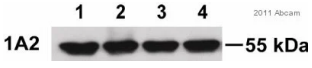


Image courtesy of an anonymous customer review.

Western blot - Anti-Cytochrome P450 1A2 antibody [d15 (16VII F10F12)] (ab22717)

All lanes:
Western blot - Anti-Cytochrome P450 1A2 antibody [d15 (16VII F10F12)] (ab22717) at 1/2500 dilution

All lanes:
Tissue lysate prepared from murine liver microsomes at 10 µg

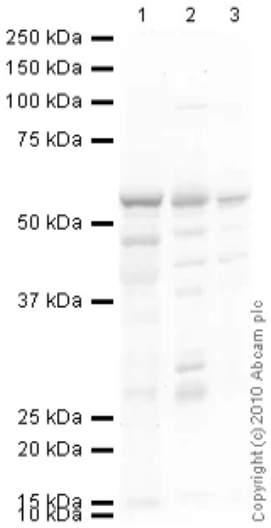
Secondary

All lanes:
Goat anti-mouse IgG(H+L)-HRP conjugate at 1/5000 dilution

Developed using the ECL technique.

Predicted band size: 58 kDa

Exposure time: 1s



Western blot - Anti-Cytochrome P450 1A2 antibody [d15 (16VII F10F12)] (ab22717)

Cytochrome P450 1A2 Western blot staining using mouse Anti-Cytochrome P450 1A2 antibody

All lanes:
Western blot - Anti-Cytochrome P450 1A2 antibody [d15 (16VII F10F12)] (ab22717) at 1 µg/mL

Lane 1:
Human liver tissue lysate - total protein (ab29889) at 10 µg

Lane 2:
Liver (Mouse) Tissue Lysate at 10 µg

Lane 3:
Liver (Rat) Tissue Lysate at 10 µg

Secondary

All lanes:
Western blot - Goat Anti-Mouse IgG H&L (HRP) preadsorbed (ab97040) at 1/5000 dilution

Developed using the ECL technique.

Performed under reducing conditions.

Predicted band size: 58 kDa

Observed band size: 30 kDa, 48 kDa, 58 kDa

Exposure time: 150s

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