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Anti-Cytochrome P450 3A4/5 Antibody

Catalog # AP59530

Product Information

Application	WB, IHC, IF/IC
Primary Accession	P08684
Other Accession	P20815
Reactivity	Human, Mouse, Rat
Host	Rabbit
Clonality	Polyclonal
Calculated MW	57343

Additional Information

Gene ID	1576
Other Names	CYP3A4; CYP3A3; Cytochrome P450 3A4; 1, 8-cineole 2-exo-monooxygenase; Albendazole monooxygenase; Albendazole sulfoxidase; CYPIIIA3; CYPIIIA4; Cytochrome P450 3A3; Cytochrome P450 HLp; Cytochrome P450 NF-25; Cytochrome P450-PCN1; Nifedipine oxidase; Quinine 3-monooxygenase; Taurochenodeoxycholate 6-alpha-hydroxylase; CYP3A5; Cytochrome P450 3A5; CYPIIIA5; Cytochrome P450 HLp2; Cytochrome P450-PCN3
Target/Specificity	KLH-conjugated synthetic peptide encompassing a sequence within the center region of human Cytochrome P450 3A4/5. The exact sequence is proprietary.
Dilution	WB~~WB (1/500 - 1/1000), IHC (1/100 - 1/200), IF/IC (1/100 - 1/500) IHC~~WB (1/500 - 1/1000), IHC (1/100 - 1/200), IF/IC (1/100 - 1/500) IF/IC~~N/A
Format	Liquid in 0.42% Potassium phosphate, 0.87% Sodium chloride, pH 7.3, 30% glycerol, and 0.01% sodium azide.
Storage	Store at -20 °C.Stable for 12 months from date of receipt

Protein Information

Name	CYP3A4 {ECO:0000303|PubMed:11470997, ECO:0000312|HGNC:HGNC:2637}
Function	A cytochrome P450 monooxygenase involved in the metabolism of sterols, steroid hormones, retinoids and fatty acids (PubMed:10681376, PubMed:11093772, PubMed:11555828, PubMed:12865317, PubMed:14559847, PubMed:15373842, PubMed:15764715, PubMed:19965576, PubMed:20702771, PubMed:21490593, PubMed:21576599). 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 (PubMed:12865317, PubMed:14559847, PubMed:15373842, PubMed:15764715, PubMed:21490593, PubMed:21576599, PubMed:2732228). Exhibits high catalytic activity for the formation of hydroxyestrogens from estrone (E1) and 17beta- estradiol (E2), namely 2-hydroxy E1 and E2, as well as D-ring hydroxylated E1 and E2 at the C-16 position (PubMed:11555828, PubMed:12865317, PubMed:14559847). Plays a role in the metabolism of androgens, particularly in oxidative deactivation of testosterone (PubMed:15373842, PubMed:15764715, PubMed:22773874, PubMed:2732228). Metabolizes testosterone to less biologically active 2beta- and 6beta- hydroxytestosterones (PubMed:15373842, PubMed:15764715, PubMed:2732228). Contributes to the formation of hydroxycholesterols (oxysterols), particularly A-ring hydroxylated cholesterol at the C- 4beta position, and side chain hydroxylated cholesterol at the C-25 position, likely contributing to cholesterol degradation and bile acid biosynthesis (PubMed:21576599). Catalyzes bisallylic hydroxylation of polyunsaturated fatty acids (PUFA) (PubMed:9435160). Catalyzes the epoxidation of double bonds of PUFA with a preference for the last double bond (PubMed:19965576). Metabolizes endocannabinoid arachidonoylethanolamide (anandamide) to 8,9-, 11,12-, and 14,15-epoxyeicosatrienoic acid ethanolamides (EpETrE-EAs), potentially modulating endocannabinoid system signaling (PubMed:20702771). Plays a role in the metabolism of retinoids. Displays high catalytic activity for oxidation of all-trans-retinol to all-trans-retinal, a rate- limiting step for the biosynthesis of all-trans-retinoic acid (atRA) (PubMed:10681376). Further metabolizes atRA toward 4-hydroxyretinoate and may play a role in hepatic atRA clearance (PubMed:11093772). Responsible for oxidative metabolism of xenobiotics. Acts as a 2-exo- monooxygenase for plant lipid 1,8-cineole (eucalyptol) (PubMed:11159812). Metabolizes the majority of the administered drugs. Catalyzes sulfoxidation of the anthelmintics albendazole and fenbendazole (PubMed:10759686). Hydroxylates antimalarial drug quinine (PubMed:8968357). Acts as a 1,4-cineole 2-exo-monooxygenase (PubMed:11695850). Also involved in vitamin D catabolism and calcium homeostasis. Catalyzes the inactivation of the active hormone calcitriol (1-alpha,25-dihydroxyvitamin D(3)) (PubMed:29461981).

Cellular Location

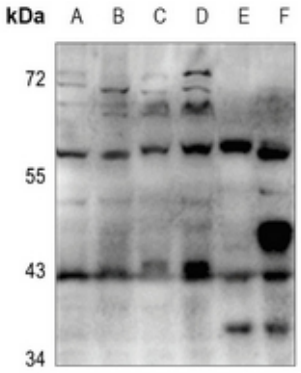
Endoplasmic reticulum membrane; Single-pass membrane protein. Microsome membrane; Single-pass membrane protein

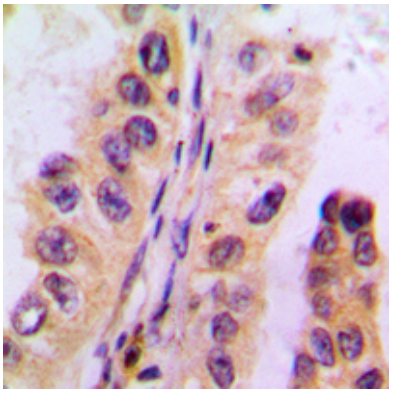
Tissue Location

Expressed in prostate and liver. According to some authors, it is not expressed in brain (PubMed:19094056). According to others, weak levels of expression are measured in some brain locations (PubMed:18545703, PubMed:19359404). Also expressed in epithelium of the small intestine and large intestine, bile duct, nasal mucosa, kidney, adrenal cortex, epithelium of the gastric mucosa with intestinal metaplasia, gallbladder, intercalated ducts of the pancreas, chief cells of the parathyroid and the corpus luteum of the ovary (at protein level).

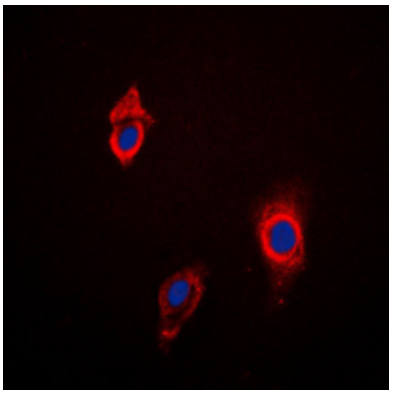
Images

Western blot analysis of Cytochrome P450 3A4/5 expression in HCT116 (A), PC3 (B), LO2 (C), HepG2 (D), mouse liver (E), rat liver (F) whole cell lysates. (Predicted band size: 57 kD; Observed band size: 57 kD)

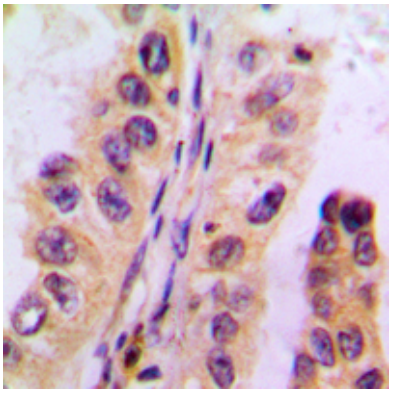




Immunohistochemical analysis of Cytochrome P450 3A4/5 staining in human liver cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.



Immunofluorescent analysis of Cytochrome P450 3A4/5 staining in HepG2 cells. Formalin-fixed cells were permeabilized with 0.1% Triton X-100 in TBS for 5-10 minutes and blocked with 3% BSA-PBS for 30 minutes at room temperature. Cells were probed with the primary antibody in 3% BSA-PBS and incubated overnight at 4 °C in a humidified chamber. Cells were washed with PBST and incubated with a DyLight 594-conjugated secondary antibody (red) in PBS at room temperature in the dark. DAPI was used to stain the cell nuclei (blue).



Immunohistochemical analysis of Cytochrome P450 3A4/5 staining in human liver cancer formalin fixed paraffin embedded tissue section. The section was pre-treated using heat mediated antigen retrieval with sodium citrate buffer (pH 6.0). The section was then incubated with the antibody at room temperature and detected using an HRP conjugated compact polymer system. DAB was used as the chromogen. The section was then counterstained with haematoxylin and mounted with DPX.

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