10320 Camino Santa Fe, Suite G
San Diego, CA 92121
Tel: 858.875.1900 Fax: 858.875.1999

CYP3A4 Antibody (Center)

Purified Rabbit Polyclonal Antibody (Pab)
Catalog # AP7788C

Product Information

Application	WB, IHC-P, FC, E
Primary Accession	P08684
Reactivity	Human
Host	Rabbit
Clonality	Polyclonal
Isotype	Rabbit IgG
Calculated MW	57343
Antigen Region	228-255

Additional Information

Gene ID	1576
Other Names	Cytochrome P450 3A4, 11413-, 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, CYP3A4, CYP3A3
Target/Specificity	This CYP3A4 antibody is generated from rabbits immunized with a KLH conjugated synthetic peptide between 228-255 amino acids from the Central region of human CYP3A4.
Dilution	WB~~1:1000 IHC-P~~1:100~500 FC~~1:10~50 E~~Use at an assay dependent concentration.
Format	Purified polyclonal antibody supplied in PBS with 0.05% (V/V) Proclin 300. This antibody is purified through a protein A column, followed by peptide affinity purification.
Storage	Maintain refrigerated at 2-8°C for up to 2 weeks. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.
Precautions	CYP3A4 Antibody (Center) is for research use only and not for use in diagnostic or therapeutic procedures.

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).

Background

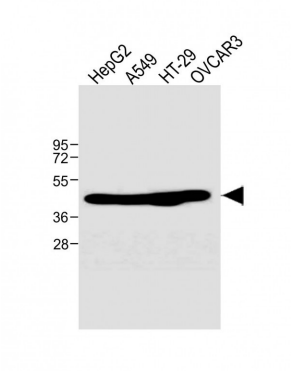
CYP3A4, is a member of the cytochrome P450 superfamily of enzymes. The cytochrome P450 proteins are

monooxygenases which catalyze many reactions involved in drug metabolism and synthesis of cholesterol, steroids and other lipids. This protein localizes to the endoplasmic reticulum and its expression is induced by glucocorticoids and some pharmacological agents. This enzyme is involved in the metabolism of approximately half the drugs which are are used today, including acetaminophen, codeine, cyclosporin A, diazepam and erythromycin. The enzyme also metabolizes some steroids and carcinogens.

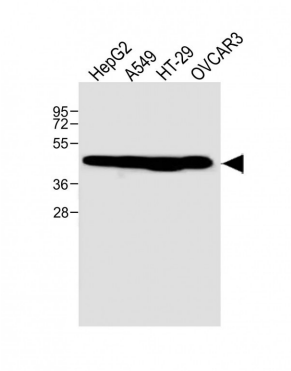
References

Sandanaraj,E., Clin. Cancer Res. 14 (21), 7116-7126 (2008)
Nelson,D.R., Pharmacogenetics 14 (1), 1-18 (2004)
Inoue,K., Jpn. J. Hum. Genet. 37 (2), 133-138 (1992)

Images



All lanes : Anti-CYP3A4 Antibody (Center) at 1:1000 dilution Lane 1: HepG2 whole cell lysate Lane 2: A549 whole cell lysate Lane 3: HT-29 whole cell lysate Lane 4: OVCAR3 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Observed band size : 50 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



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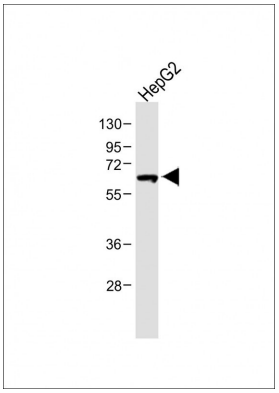
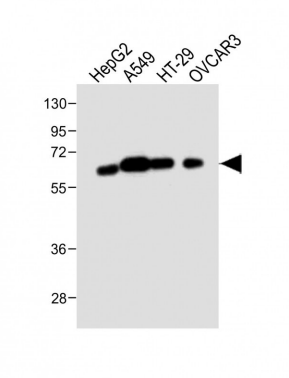
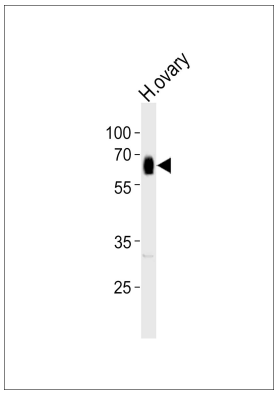


Anti-CYP3A4 Antibody (Center) at 1:1000 dilution + HepG2 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase conjugated at 1/10000 dilution. Predicted band size : 57 kDa Blocking/Dilution buffer: 5% NFDM/TBST.

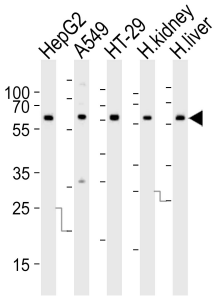
All lanes : Anti-CYP3A4 Antibody (Center) at 1:1000 dilution Lane 1: HepG2 whole cell lysate Lane 2: A549 whole cell lysate Lane 3: HT-29 whole cell lysate Lane 4: OVCAR3 whole cell lysate Lysates/proteins at 20 µg per lane. Secondary Goat Anti-Rabbit IgG, (H+L), Peroxidase



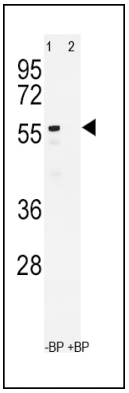
conjugated at 1/10000 dilution. Predicted band size : 57 kDa Blocking/Dilution buffer: 5% NFDM/TBST.



Western blot analysis of lysate from human ovary tissue, using CYP3A4 Antibody (Center)(Cat. #AP7788c). AP7788c was diluted at 1:1000. A goat anti-rabbit IgG H&L(HRP) at 1:10000 dilution was used as the secondary antibody. Lysate at 20ug.

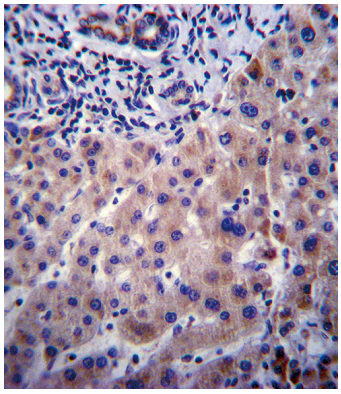


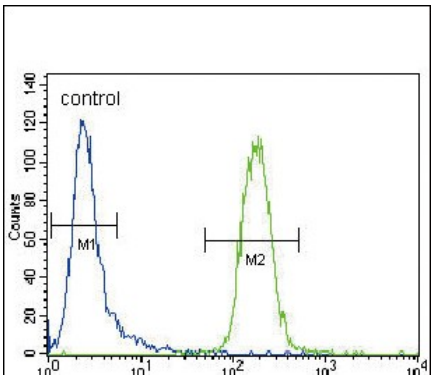
Western blot analysis of lysates from HepG2, A549, HT-29 cell line, human kidney and liver tissue lysate (from left to right), using CYP3A4 Antibody (Center)(Cat. #AP7788c). AP7788c was diluted at 1:1000 at each lane. A goat anti-rabbit IgG H&L(HRP) at 1:10000 dilution was used as the secondary antibody. Lysates at 35ug per lane.



Western blot analysis of CYP3A4 Antibody (Center) (Cat. #AP7788c) in NCI-H460 cell line lysates (35ug/lane). CYP3A4 (arrow) was detected using the purified Pab.

CYP3A4 Antibody (Center) (Cat. #AP7788c)immunohistochemistry analysis in formalin fixed and paraffin embedded human liver tissue followed by peroxidase conjugation of the secondary antibody and DAB staining.This data demonstrates the use of CYP3A4 Antibody (Center) for immunohistochemistry. Clinical relevance has not been evaluated.





CYP3A4 Antibody (Center) (Cat. #AP7788c) flow cytometric analysis of CEM cells (right histogram) compared to a negative control cell (left histogram).FITC-conjugated goat-anti-rabbit secondary antibodies were used for the analysis.

Citations

- Effects of Danshen capsules on the pharmacokinetics and pharmacodynamics of clopidogrel in healthy volunteers.