10320 Camino Santa Fe, Suite G
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CYP3A4 Antibody
Purified Mouse Monoclonal Antibody
Catalog # AO1696a

Specification

CYP3A4 Antibody - Product Information

Application	**E, WB, IHC, IF, FC**
Primary Accession	P08684
Reactivity	**Human**
Host	**Mouse**
Clonality	**Monoclonal**
Isotype	**IgG1**
Calculated MW	**57.3kDa KDa**

Description
This gene encodes a member of the cytochrome P450 superfamily of enzymes. The cytochrome P450 proteins are monooxygenases that 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 in use today, including acetaminophen, codeine, cyclosporin A, diazepam and erythromycin. The enzyme also metabolizes some steroids and carcinogens. This gene is part of a cluster of cytochrome P450 genes on chromosome 7q21.1. Previously another CYP3A gene, CYP3A3, was thought to exist; however, it is now thought that this sequence represents a transcript variant of CYP3A4. Alternatively spliced transcript variants encoding different isoforms have been identified.

Immunogen
Purified recombinant fragment of human CYP3A4 expressed in E. Coli.

Formulation
Purified antibody in PBS with 0.05% sodium azide

CYP3A4 Antibody - Additional Information

Gene ID 1576

Other Names
Cytochrome P450 3A4, 1.14.13.-, 1, 8-cineole 2-exo-monooxygenase, 1.14.13.157, Albendazole monooxygenase, 1.14.13.32, Albendazole sulfoxidase, CYPIIIA3, CYPIIIA4, Cytochrome P450 3A3, Cytochrome P450 HLp, Cytochrome P450 NF-25, Cytochrome P450-PCN1, Nifedipine oxidase, Quinine 3-monooxygenase, 1.14.13.67, Taurochenodeoxycholate 6-alpha-hydroxylase, 1.14.13.97, CYP3A4, CYP3A3

Dilution
E~~1/10000
WB~~1/500 - 1/2000
IHC~~1/200 - 1/1000
IF~~1/200 - 1/1000
FC~~1/200 - 1/400

Storage
Maintain refrigerated at 2-8°C for up to 6 months. For long term storage store at -20°C in small aliquots to prevent freeze-thaw cycles.

Precautions
CYP3A4 Antibody is for research use only and not for use in diagnostic or therapeutic procedures.

CYP3A4 Antibody - 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).

CYP3A4 Antibody - Protocols

Provided below are standard protocols that you may find useful for product applications.

- Western Blot
- Blocking Peptides
- Dot Blot
- Immunohistochemistry
- Immunofluorescence
- Immunoprecipitation
- Flow Cytomety
- Cell Culture

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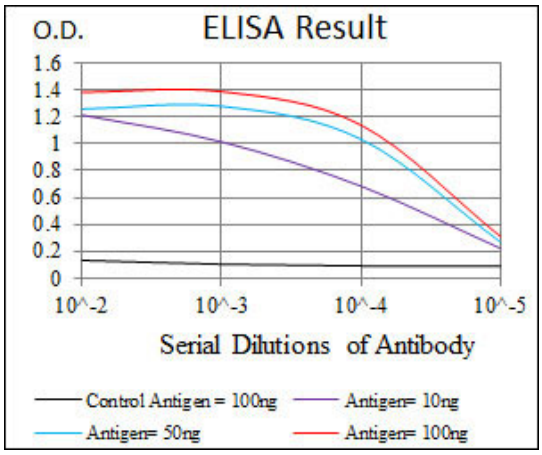

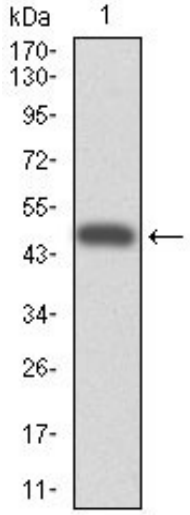

Figure 1: Western blot analysis using CYP3A4 mAb against human CYP3A4 (AA: 243-430) recombinant protein. (Expected MW is 47.5 kDa)

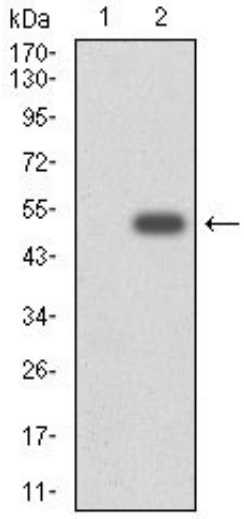

Figure 2: Western blot analysis using CYP3A4 mAb against HEK293 (1) and CYP3A4 (AA: 243-430)-hIgGFc transfected HEK293 (2) cell lysate.

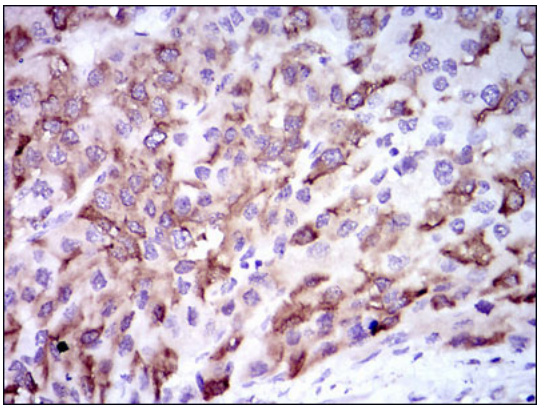

Figure 3: Immunohistochemical analysis of paraffin-embedded liver cancer tissues using CYP3A4 mouse mAb with DAB staining.

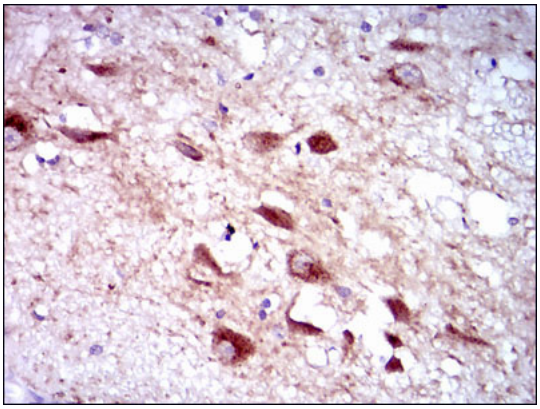

Figure 4: Immunohistochemical analysis of paraffin-embedded human brain tissues using CYP3A4 mouse mAb with DAB staining.

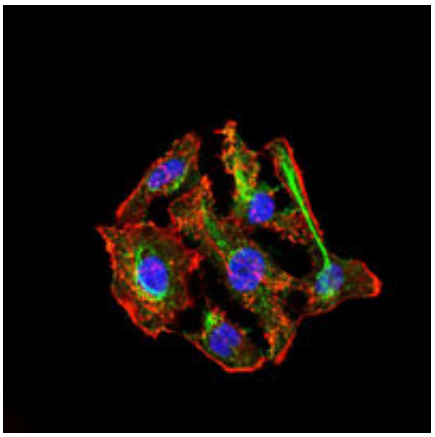

Figure 5: Immunofluorescence analysis of HepG2 cells using CYP3A4 mouse mAb (green). Blue: DRAQ5 fluorescent DNA dye. Red: Actin filaments have been labeled with Alexa Fluor-555 phalloidin.

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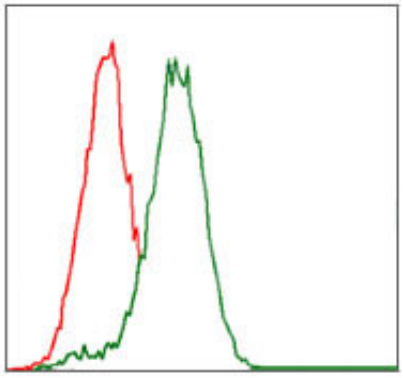

Figure 6: Flow cytometric analysis of HepG2 cells using CYP3A4 mouse mAb (green) and negative control (red).

CYP3A4 Antibody - References

Drug Metab Dispos. 2009 Dec;37(12):2305-13. Biochem Pharmacol. 2010 Jan 15;79(2):277-87.