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



# Cytochrome P450 3A4 Antibody

Rabbit mAb Catalog # AP91412

### **Product Information**

Application WB, IHC, IP
Primary Accession P08684
Reactivity Human
Clonality Monoclonal

Other Names CYP3A4; CYPIIIA3; CYPIIIA4; Cytochrome P450 3A3; Cytochrome P450 HLp;

Cytochrome P450 NF-25; Cytochrome P450-PCN1; Nifedipine oxidase;

IsotypeRabbit IgGHostRabbitCalculated MW57343

#### **Additional Information**

**Dilution** WB 1:1000~1:5000 IHC 1:50~1:200 IP 1:50

**Purification** Affinity-chromatography

**Immunogen** A synthesized peptide derived from human Cytochrome P450 3A4

**Description** Cytochromes P450 are a group of heme-thiolate monooxygenases. In liver

microsomes, this enzyme is involved in an NADPH-dependent electron transport pathway. It performs a variety of oxidation reactions (e.g. caffeine 8-oxidation, omeprazole sulphoxidation, midazolam 1'-hydroxylation and midazolam 4-hydroxylation) of structurally unrelated compounds, including

steroids, fatty acids, and xenobiotics. The enzyme also hydroxylates

etoposide.

Storage Condition and Buffer Rabbit IgG in phosphate buffered saline, pH 7.4, 150mM NaCl, 0.02% sodium

azide and 50% glycerol. Store at +4°C short term. Store at -20°C long term.

Avoid freeze / thaw cycle.

#### **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:<u>21576599</u>). 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:<u>12865317</u>, PubMed:<u>14559847</u>,

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: 2773874, 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 14,15epoxyeicosatrienoic 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: <u>29461981</u>).

**Cellular Location** 

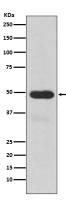
Endoplasmic reticulum membrane; Single-pass membrane protein. Microsome membrane; Single-pass membrane protein

**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 expression in Human fetal liver lysate.



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