

# CYP4A (E-6): sc-271983

## BACKGROUND

Cytochrome P450 proteins are heme-thiolate monooxygenases that mediate NADPH-dependent electron transport and function to oxidize a variety of structurally unrelated compounds, including steroids, fatty acids and xenobiotics. Specifically, cytochrome P450s are responsible for metabolizing arachidonic acid to hydroxyeicosatetraenoic acid (a regulator of blood pressure) and epoxyeicosatrienoic acid (a molecule involved in signaling events). The CYP4A family of cytochrome P450 proteins contains two human proteins and multiple murine proteins, including CYP4A10, CYP4A12A, CYP4A12B, CYP4A14, CYP4A29, CYP4A31, CYP4A32 and CYP4A30B, all of which may be involved in the metabolism of fatty acids.

## REFERENCES

1. Nelson, D.R., et al. 1996. P450 superfamily: update on new sequences, gene mapping, accession numbers and nomenclature. *Pharmacogenetics* 6: 1-42.
2. Hoch, U., et al. 2001. Covalently linked heme in cytochrome p450a fatty acid hydroxylases. *J. Biol. Chem.* 276: 11339-11346.
3. Zhang, F., et al. 2002. Arachidonate CYP hydroxylases of kidney contribute to formation of hypertension and maintenance of blood pressure. *Acta Pharmacol. Sin.* 23: 497-502.

## SOURCE

CYP4A (E-6) is a mouse monoclonal antibody raised against amino acids 301-507 mapping at the C-terminus of CYP4A14 of mouse origin.

## PRODUCT

Each vial contains 200 µg IgG<sub>1</sub> kappa light chain in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

CYP4A (E-6) is available conjugated to agarose (sc-271983 AC), 500 µg/0.25 ml agarose in 1 ml, for IP; to HRP (sc-271983 HRP), 200 µg/ml, for WB, IHC(P) and ELISA; to either phycoerythrin (sc-271983 PE), fluorescein (sc-271983 FITC), Alexa Fluor® 488 (sc-271983 AF488), Alexa Fluor® 546 (sc-271983 AF546), Alexa Fluor® 594 (sc-271983 AF594) or Alexa Fluor® 647 (sc-271983 AF647), 200 µg/ml, for WB (RGB), IF, IHC(P) and FCM; and to either Alexa Fluor® 680 (sc-271983 AF680) or Alexa Fluor® 790 (sc-271983 AF790), 200 µg/ml, for Near-Infrared (NIR) WB, IF and FCM.

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## APPLICATIONS

CYP4A (E-6) is recommended for detection of a broad range of CYP4A family members of mouse and rat origin by Western Blotting (starting dilution 1:100, dilution range 1:100-1:1000), immunoprecipitation [1-2 µg per 100-500 µg of total protein (1 ml of cell lysate)], immunofluorescence (starting dilution 1:50, dilution range 1:50-1:500), immunohistochemistry (including paraffin-embedded sections) (starting dilution 1:50, dilution range 1:50-1:500) and solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000).

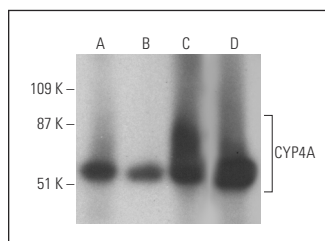
Molecular Weight of CYP4A family members: 50-60 kDa.

Positive Controls: mouse liver extract: sc-2256, rat kidney extract: sc-2394 or mouse kidney extract: sc-2255.

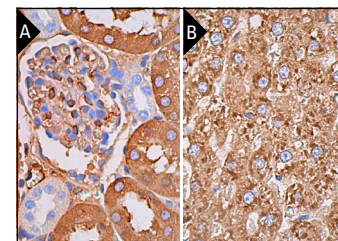
## STORAGE

Store at 4° C, \*\*DO NOT FREEZE\*\*. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## DATA



CYP4A (E-6) HRP: sc-271983 HRP. Direct western blot analysis of CYP4A expression in mouse postnatal liver (A), mouse liver (B), mouse kidney (C) and rat kidney (D) tissue extracts.



CYP4A (E-6): sc-271983. Immunoperoxidase staining of formalin fixed, paraffin-embedded mouse kidney tissue showing cytoplasmic staining of cells in glomeruli and cells in tubules (A). Immunoperoxidase staining of formalin fixed, paraffin-embedded rat liver tissue showing cytoplasmic staining of hepatocytes (B).

## SELECT PRODUCT CITATIONS

1. Nayeem, M.A., et al. 2013. Adenosine A<sub>2A</sub> receptor modulates vascular response in soluble epoxide hydrolase-null mice through CYP-epoxygenases and PPAR<sub>γ</sub>. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 304: R23-R32.
2. Pradhan, L., et al. 2014. High salt diet exacerbates vascular contraction in the absence of adenosine A<sub>2A</sub> receptor. *J. Cardiovasc. Pharmacol.* 63: 385-394.
3. Yadav, V.R., et al. 2015. Angiotensin II stimulation alters vasomotor response to adenosine in mouse mesenteric artery: role for A<sub>1</sub> and A<sub>2B</sub> adenosine receptors. *Br. J. Pharmacol.* 172: 4959-4969.
4. Yadav, V.R., et al. 2016. Vascular endothelial over-expression of soluble epoxide hydrolase (Tie2-sEH) enhances adenosine A<sub>1</sub> receptor-dependent contraction in mouse mesenteric arteries: role of ATP-sensitive K<sup>+</sup> channels. *Mol. Cell. Biochem.* 422: 197-206.
5. Gilani, A., et al. 2018. High-fat diet-induced obesity and Insulin resistance in CYP4a14<sup>-/-</sup> mice is mediated by 20-HETE. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 315: R934-R944.
6. Wang, R., et al. 2019. Specific inhibition of CYP4A alleviates myocardial oxidative stress and apoptosis induced by advanced glycation end-products. *Front. Pharmacol.* 10: 876.
7. Gilani, A., et al. 2020. Proximal tubular-targeted overexpression of the Cyp4a12-20-HETE synthase promotes salt-sensitive hypertension in male mice. *Am. J. Physiol. Regul. Integr. Comp. Physiol.* 319: R87-R95.
8. Yang, Z., et al. 2021. The role of SHP/REV-ERBα/CYP4A axis in the pathogenesis of alcohol-associated liver disease. *JCI Insight* 6: 140687.
9. Li, B., et al. 2023. 20-Hydroxytetraenoic acid induces hepatic fibrosis via the TGF-β1/Smad3 signaling pathway. *Toxicol. Lett.* 373: 1-12.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.