

Cytochrome P450 in GtoPdb v.2025.3

Kathryn Burns¹ and Nuala Ann Helsby¹

1. University of Auckland, New Zealand

Abstract

The cytochrome P450 enzyme superfamily (CYP), E.C. 1.14.-.-, are haem-containing monooxygenases with a vast range of both endogenous and exogenous substrates. These include sterols, fatty acids, eicosanoids, fat-soluble vitamins, hormones, pesticides and carcinogens as well as drugs. Listed below are the human enzymes, their relationship with rodent CYP enzyme activities is obscure in that the species orthologue may not metabolise the same substrates. Some of the CYP enzymes located in the liver are particularly important for drug metabolism, both hepatic and extrahepatic CYP enzymes also contribute to patho/physiological processes. Genetic variation of CYP isoforms is widespread and likely underlies a proportion of individual variation in drug disposition. The superfamily has the root symbol CYP, followed by a number to indicate the family, a capital letter for the subfamily with a numeral for the individual enzyme. Some CYP are able to metabolise multiple substrates, others are oligo- or mono- specific. CYP also catalyse diverse oxidation and reduction reactions. These include ring hydroxylation, N-oxidation, sulfoxidation, epoxidation, the dealkylation of N-, S- and O- moieties, desulfation, deamination, as well as reduction of azo, nitro and N-oxide groups.

Contents

This is a citation summary for Cytochrome P450 in the [Guide to Pharmacology](#) database (GtoPdb). It exists purely as an adjunct to the database to facilitate the recognition of citations to and from the database by citation analyzers. Readers will almost certainly want to visit the relevant sections of the database which are given here under database links.

[GtoPdb](#) is an expert-driven guide to pharmacological targets and the substances that act on them. GtoPdb is a reference work which is most usefully represented as an on-line database. As in any publication this work should be appropriately cited, and the papers it cites should also be recognized. This document provides a citation for the relevant parts of the database, and also provides a reference list for the research cited by those parts. For further details see [16].

Please note that the database version for the citations given in GtoPdb are to the most recent preceding version in which the family or its subfamilies and targets were substantially changed. The links below are to the current version. If you need to consult the cited version, rather than the most recent version, please contact the GtoPdb curators.

Database links

Cytochrome P450

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=242>

CYP1 family

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=261>

Enzymes

CYP1A1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1318>

CYP1A2

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1319>

CYP1B1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1320>

CYP2 family: drug metabolising subset

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=262>

Enzymes

CYP2A6

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1321>

CYP2A7

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1322>

CYP2A13

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1323>

CYP2B6

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1324>

CYP2C8

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1325>

CYP2C9

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1326>

CYP2C18

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1327>

CYP2C19

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1328>

CYP2D6

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1329>

CYP2E1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1330>

CYP2F1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1331>

CYP2J2

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1332>

CYP2 family: physiological enzymes subset

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=1062>

Enzymes

CYP2R1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1333>

CYP2S1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1334>

CYP2U1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1335>

CYP2W1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1336>

CYP3 family

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=263>

Enzymes

CYP3A4

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1337>

CYP3A5

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1338>

CYP3A7

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1339>

CYP3A43

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1340>

CYP4 family

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=264>

Enzymes

CYP4A11

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1341>

CYP4A22

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1342>

CYP4B1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1343>

CYP4F2

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1344>

CYP4F3

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1345>

CYP4F8

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1346>

CYP4F11

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1347>

CYP4F12

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1348>

CYP4F22

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1349>
CYP4V2

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1350>
CYP4X1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1351>
CYP4Z1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1352>
CYP5, CYP7 and CYP8 families

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=265>

Enzymes

Thromboxane-A synthase(CYP5A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1353>

Cholesterol 7 α -hydroxylase(CYP7A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1354>
CYP7B1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1355>
Prostacyclin synthase(CYP8A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1356>
CYP8B1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1357>

CYP11, CYP17, CYP19, CYP20 and CYP21 families

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=266>

Enzymes

Cholesterol side-chain cleavage enzyme(CYP11A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1358>

Steroid 11 β -hydroxylase(CYP11B1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1359>

Aldosterone synthase(CYP11B2)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1360>
CYP17A1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1361>
Aromatase(CYP19A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1362>
CYP20A1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1363>

Steroid 21-hydroxylase(CYP21A2)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1364>

CYP24, CYP26 and CYP27 families

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=267>

Enzymes

Vitamin D3 24-hydroxylase(CYP24A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1365>
CYP26A1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1366>
CYP26B1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1367>
CYP26C1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1368>
Sterol 27-hydroxylase(CYP27A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1369>
25-Hydroxyvitamin D 1- α -hydroxylase(CYP27B1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1370>
CYP27C1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1371>

CYP39, CYP46 and CYP51 families

<https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=268>

Enzymes

CYP39A1

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1372>

Cholesterol 24-hydroxylase(CYP46A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1373>

Lanosterol 14- α -demethylase(CYP51A1)

<https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=1374>

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