

**Table I.** Families of structural domains of P450-containing systems.

P450 enzyme system	FAD domain	Flavodoxin	Iron-sulphur protein	Cytochrome <i>b</i> <sub>5</sub>	P450
	FNR-like <sup>a</sup>				
Microsomal 1	NADPH:P450 reductase FAD domain	FMN domain		cytochrome <i>b</i> <sub>5</sub> <sup>b</sup>	P450
<i>S. carbophilus</i>	NADH:P450 reductase FAD domain ?	FMN domain ?			P450sca
<i>B. megaterium</i> P450 <sub>BM-3</sub> (CYP102)	flavin domain				P450 domain
<i>F. oxysporum</i> fatty acid hydroxylase	FAD domain	FMN domain			P450 domain
Nitric oxide synthase	FAD domain ?	FMN domain ?			P450 domain ?
	flavin domain				
	FAD domain	FMN domain			
Microsomal 2	NADH:cyt <i>b</i> <sub>5</sub> reductase			cytochrome <i>b</i> <sub>5</sub>	P450 <sup>b</sup>
	ADXR-like		[Fe <sub>2</sub> S <sub>2</sub> ]		
Mitochondrial	adrenodoxin reductase		adrenodoxin		P450scc, 11β (CYP11); P450c27 (CYP27)
	GR-like		[Fe <sub>2</sub> S <sub>2</sub> ]		
<i>P. putida</i> camphor hydroxylase	putidaredoxin reductase		putidaredoxin		P450cam (CYP101)
<i>Pseudomonas</i> terpineol hydroxylase	terpredoxin reductase		terpredoxin		P450terp (CYP108)
<i>Rhodococcus</i> thiocarbamate hydroxylase	rhodocoxin reductase ( <i>thcD</i> )		rhodocoxin ( <i>thcC</i> )		P450 (CYP116)
	GR-like		[Fe <sub>3</sub> S <sub>4</sub> ]		
<i>S. griseolus</i> SU1	?		Fd-1		P450 SU1 (CYP105A1)
<i>S. griseolus</i> SU2	?		Fd-2		P450 SU2 (CYP105B1)
<i>S. griseus</i>	?		fdx soy		P450soy (CYP105D1)
<i>R. fascians</i>	?		fdx (ORF2)		P450 (ORF1)
<i>S. erythraea</i>	fdx reductase		erythrodoxin		P450eryF (CYP107)
<i>F. oxysporum</i> nitric oxide reductase	?	?	?	?	P450nor (CYP55)

<sup>a</sup>Abbreviations used: FNR, ferredoxin:NADP<sup>+</sup> reductase; fdx, ferredoxin; cyt *b*<sub>5</sub>, cytochrome *b*<sub>5</sub>; ADXR, adrenodoxin reductase; GR, glutathione reductase.

<sup>b</sup>Additional component of redox chain.

**Table II.** Other enzyme systems sharing domains typical for P450-containing systems.

Enzyme system	FAD domain	Flavodoxin	Iron-sulphur protein	cytochrome <i>b</i> <sub>5</sub>	Other domains
	FNR-like <sup>a</sup>				
Microsomal fatty acid desaturase	NADH:cyt <i>b</i> <sub>5</sub> reductase			cytochrome <i>b</i> <sub>5</sub>	acyl-CoA desaturase
Erythrocyte Methb reductase	NADH:cyt <i>b</i> <sub>5</sub> reductase			cytochrome <i>b</i> <sub>5</sub>	globin
Photosynthetic electron transport chain	fdx:NADP <sup>+</sup> reductase	flavodoxin <sup>b</sup>	ferredoxin [Fe <sub>2</sub> S <sub>2</sub> ] <sup>b</sup>		
Nitrate reductase	flavin domain			cytochrome <i>b</i> domain	Mo-pterin domain
Sulphite reductase	FAD domain	α-subunit (flavoprotein) FMN domain	β-subunit [Fe <sub>4</sub> S <sub>4</sub> ] center		β-subunit (haemoprotein)
<i>P. cepacia</i> phthalate dioxygenase	flavin domain <sup>c</sup>	phthalate dioxygenase reductase fdx [Fe <sub>2</sub> S <sub>2</sub> ] domain			oxygenase
Flavo-haemoglobin	flavin domain				globin domain
	GR-like				
<i>P. putida</i> benzene 1,2 dioxygenase	fdx reductase ( <i>bnzD</i> )		[Fe <sub>2</sub> S <sub>2</sub> ] fdx ( <i>bnzC</i> )		oxygenase α ( <i>bnzA</i> ) and β ( <i>bnzB</i> ) subunits
<i>P. putida</i> toluene 1,2 dioxygenase	fdx reductase ( <i>todA</i> )		[Fe <sub>2</sub> S <sub>2</sub> ] fdx ( <i>todB</i> )		oxygenase α ( <i>todC1</i> ) and β ( <i>todC2</i> ) subunits
<i>Pseudomonas</i> biphenyl dioxygenase	fdx reductase ( <i>bphG</i> )		[Fe <sub>2</sub> S <sub>2</sub> ] fdx ( <i>bphF</i> )		oxygenase large ( <i>bphA</i> ) and small ( <i>bphE</i> ) subunits
<i>P. oleovorans</i> alkane hydroxylase	rubredoxin reductase ( <i>alkT</i> )		rubredoxin ( <i>alkG</i> )		alkane 1-monooxygenase ( <i>alkB</i> )
Thioredoxin system	thioredoxin reductase				thioredoxin
Flavocytochrome <i>b</i> <sub>2</sub>				cytochrome <i>b</i> <sub>2</sub> domain	(β/α) <sub>8</sub> -barrel
Sulphite oxidase				cytochrome <i>b</i> domain	Mo-pterin domain

<sup>a</sup>Abbreviations used: FNR, ferredoxin:NADP<sup>+</sup> reductase; fdx, ferredoxin; cyt *b*<sub>5</sub>, cytochrome *b*<sub>5</sub>; Methb, methaemoglobin; GR, glutathione reductase.

<sup>b</sup>Additional component of redox chain.

<sup>c</sup>Flavin domain of PDR binds FMN.

**Table III.** Number of exons in genes of P450-containing systems

Gene <sup>a</sup>	Species	Number of exons	Gene	Species	Number of exons
P450s					
<i>CYP1</i>	vertebrata	7	<i>CYP21</i>	mammals	10
<i>CYP2</i>	vertebrata	9	<i>CYP24</i>	rat	12
<i>CYP3</i>	mammals	13	<i>CYP53</i>	<i>Aspergillus niger</i>	3
<i>CYP4A1</i>	rat	13	<i>CYP55</i>	<i>Fusarium oxysporum</i>	8
<i>CYP4A2</i>	rat	12	<i>CYP57</i>	<i>Nectria haematococca</i>	5
<i>CYP4B1</i>	human	11	Reductases		
<i>CYP4D2</i>	<i>Drosophila</i>	5	<i>adxR</i>	human	12
<i>CYP5</i>	human	13	<i>b5R</i>	rat	3
<i>CYP7</i>	mammals	6	<i>CPR</i>	rat	15
<i>CYP11A1</i>	mammals	9	Nitric oxide synthases		
<i>CYP11B1</i>	mammals	9	<i>NOS3</i>	human	26
<i>CYP11B2</i>	human	9	Iron-sulphur proteins		
<i>CYP11B4</i>	rat	8	<i>adx</i>	bovine	4
<i>CYP17A1</i>	mammals	8	Cytochrome <i>b</i> <sub>5</sub>		
<i>CYP19</i>	human	10	<i>cyb5</i>	bovine	6
<i>CYP19</i>	chicken	9	<i>cyb5</i>	human	6

<sup>a</sup>Abbreviations: *adxR*, adrenodoxin reductase gene; *b5R*, NADH:cytochrome *b*<sub>5</sub> reductase gene; *CPR*, NADPH:P450 reductase gene; *NOS3*, type III (endothelial-type) nitric oxide synthase gene; *adx*, adrenodoxin gene; *cyb5*, cytochrome *b*<sub>5</sub> gene.