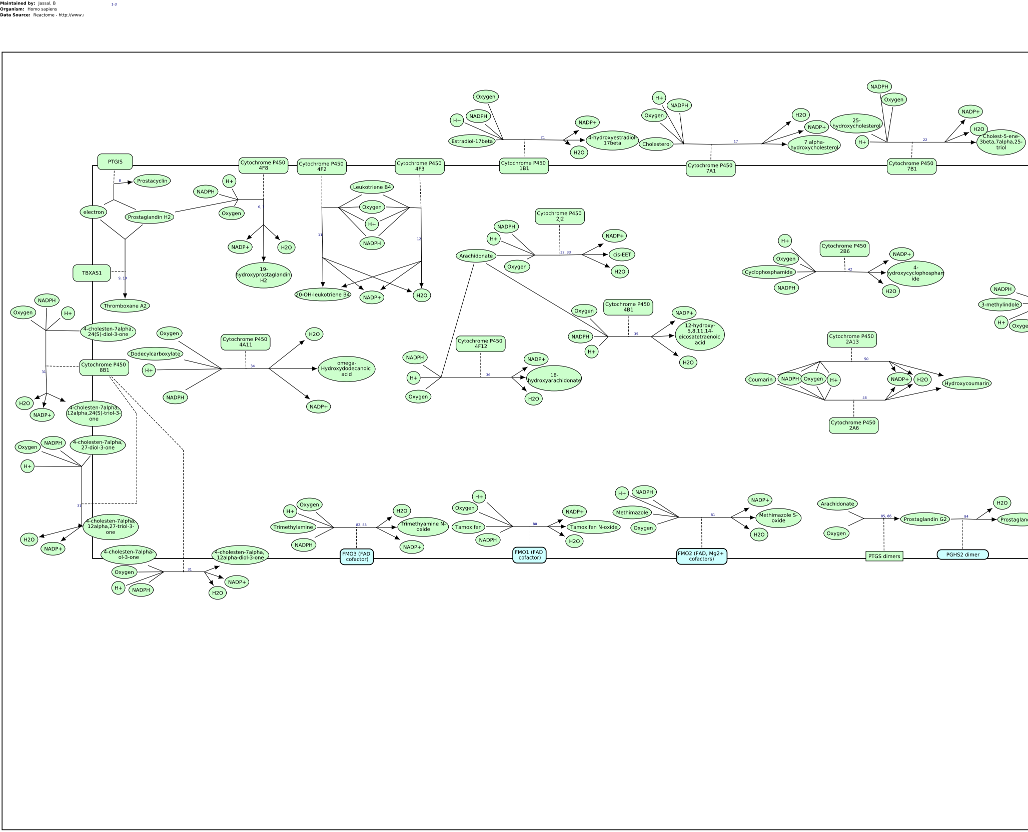
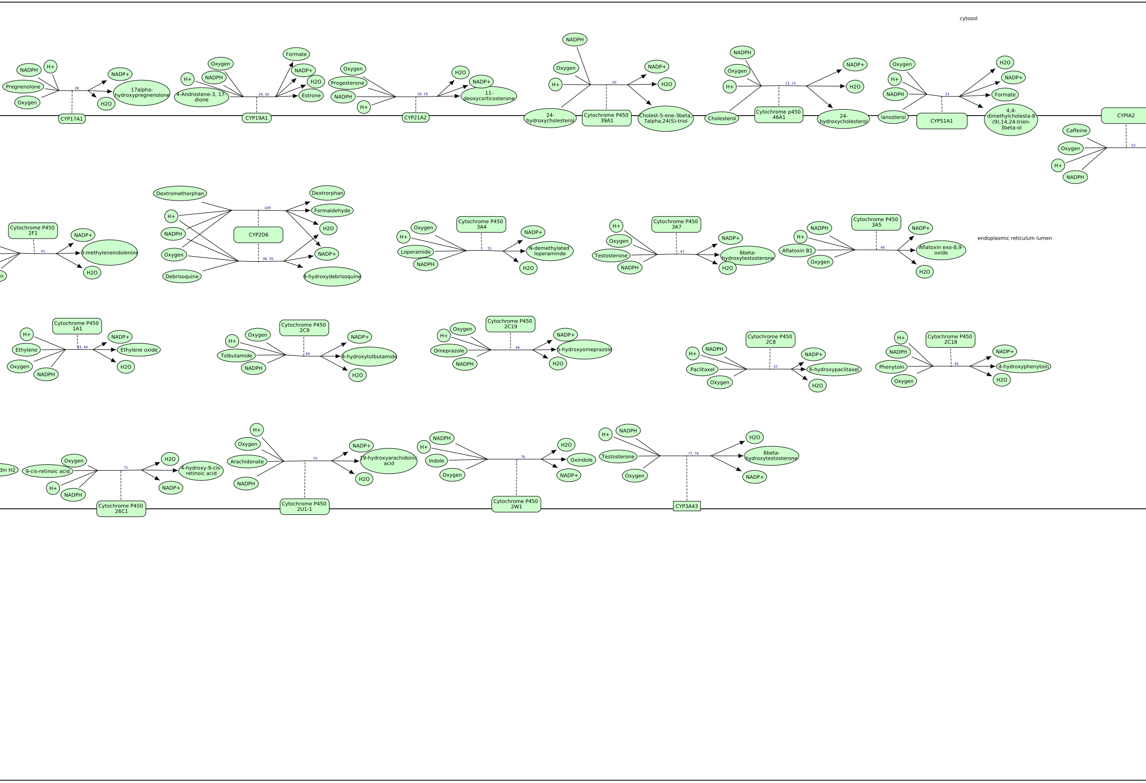
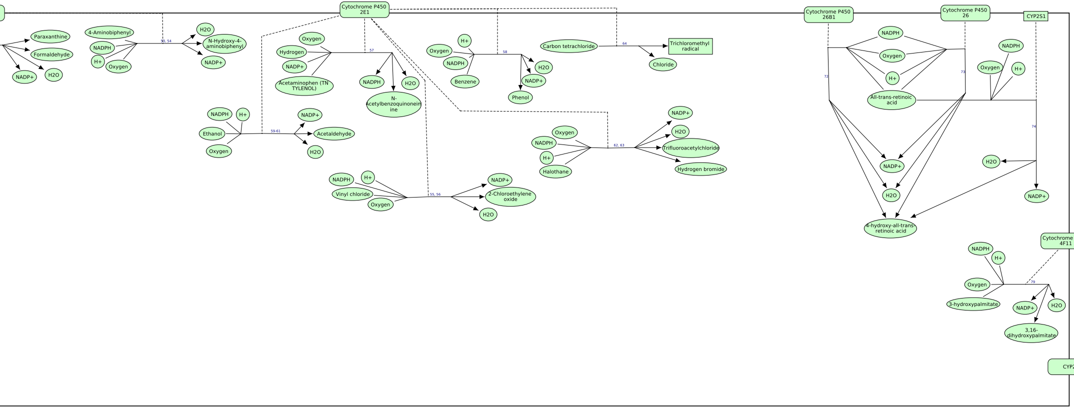
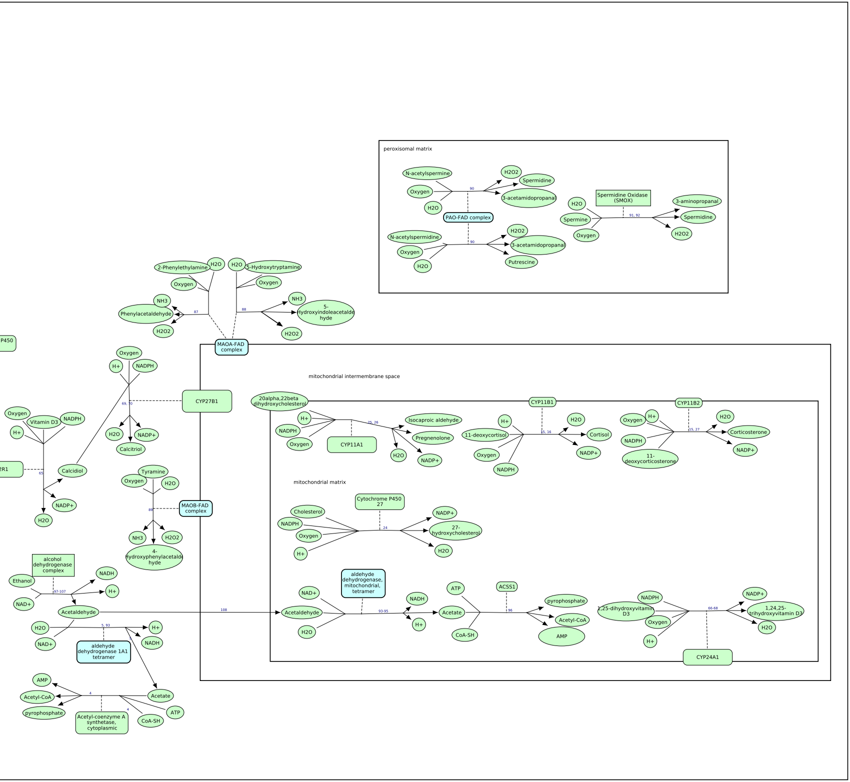
Title: Phase 1 - Functionalization of co
Maintained by: Jassal, B
Organism: Homo sapiens
Data Source: Reactome - http://www.r



1-3
PTGIS
Prostacyclin
8
electron
Prostaglandin H2
TBXAS1
9, 10
Thromboxane A2
Cytochrome P450 4F8
NADPH
H+
Oxygen
6, 7
NADP+
H2O
19-hydroxyprostaglandin H2
Cytochrome P450 4F2
Cytochrome P450 4F3
Leukotriene B4
Oxygen
H+
NADPH
11
12
20-OH-leukotriene B4
NADP+
H2O
Oxygen
NADPH
H+
Estradiol-17beta
21
NADP+
4-hydroxyestradiol-17beta
H2O
Cytochrome P450 1B1
H+
NADPH
Oxygen
Cholesterol
17
H2O
NADP+
7 alpha-hydroxycholesterol
Cytochrome P450 7A1
NADPH
Oxygen
25-hydroxycholesterol
H+
22
NADP+
H2O
Cholest-5-ene-3beta,7alpha,25-triol
Cytochrome P450 7B1
Cytochrome P450 2J2
NADPH
H+
Arachidonate
Oxygen
32, 33
NADP+
cis-EET
H2O
H+
Oxygen
Cyclophosphamide
NADPH
Cytochrome P450 2B6
42
NADP+
4-hydroxycyclophosphamide
H2O
NADPH
3-methylindole
H+
Oxyge
NADPH
Oxygen
H+
4-cholesten-7alpha,24(S)-diol-3-one
Cytochrome P450 8B1
31
H2O
NADP+
4-cholesten-7alpha,12alpha,24(S)-triol-3-one
Oxygen
Dodecylcarboxylate
H+
NADPH
Cytochrome P450 4A11
34
H2O
omega-Hydroxydodecanoic acid
NADP+
NADPH
H+
Oxygen
Cytochrome P450 4F12
36
NADP+
18-hydroxyarachidonate
H2O
Oxygen
NADPH
H+
Cytochrome P450 4B1
35
NADP+
12-hydroxy-5,8,11,14-eicosatetraenoic acid
H2O
Cytochrome P450 2A13
Coumarin
NADPH
Oxygen
H+
50
48
NADP+
H2O
Hydroxycoumarin
Cytochrome P450 2A6
Oxygen
NADPH
4-cholesten-7alpha,27-diol-3-one
H+
31
4-cholesten-7alpha,12alpha,27-triol-3-one
H2O
NADP+
4-cholesten-7alpha-ol-3-one
Oxygen
H+
NADPH
31
4-cholesten-7alpha,12alpha-diol-3-one
NADP+
H2O
H+
Oxygen
Trimethylamine
NADPH
82, 83
H2O
Trimethyamine N-oxide
NADP+
FMO3 (FAD cofactor)
H+
Oxygen
Tamoxifen
NADPH
80
NADP+
Tamoxifen N-oxide
H2O
FMO1 (FAD cofactor)
H+
NADPH
Methimazole
Oxygen
81
NADP+
Methimazole S-oxide
H2O
FMO2 (FAD, Mg2+ cofactors)
Arachidonate
Oxygen
85, 86
Prostaglandin G2
PTGS dimers
84
H2O
Prostaglan
PGHS2 dimer


cytosol
endoplasmic reticulum lumen
NADPH
H+
Pregnenolone
Oxygen
28
NADP+
17alpha-hydroxypregnenolone
H2O
CYP17A1
Oxygen
H+
NADPH
4-Androstene-3, 17-dione
29, 30
Formate
NADP+
H2O
Estrone
CYP19A1
Oxygen
Progesterone
NADPH
H+
18, 19
H2O
NADP+
11-deoxycorticosterone
CYP21A2
NADPH
Oxygen
H+
20
NADP+
H2O
24-hydroxycholesterol
Cytochrome P450 39A1
Cholest-5-ene-3beta, 7alpha,24(S)-triol
NADPH
Oxygen
H+
13, 14
NADP+
H2O
Cholesterol
Cytochrome p450 46A1
24-hydroxycholesterol
Oxygen
H+
NADPH
23
H2O
NADP+
Formate
lanosterol
CYP51A1
4,4-dimethylcholesta-8(9),14,24-trien-3beta-ol
CYPIA2
Caffeine
Oxygen
H+
NADPH
52
Cytochrome P450 2F1
41
NADP+
3-methyleneindolenine
H2O
n
Dextromethorphan
H+
NADPH
Oxygen
Debrisoquine
109
CYP2D6
38, 39
Dextrorphan
Formaldehyde
H2O
NADP+
4-hydroxydebrisoquine
Oxygen
H+
Loperamide
NADPH
Cytochrome P450 3A4
51
NADP+
N-demethylated loperaminde
H2O
H+
Oxygen
Testosterone
NADPH
Cytochrome P450 3A7
47
NADP+
6beta-hydroxytestosterone
H2O
NADPH
H+
Aflatoxin B1
Oxygen
Cytochrome P450 3A5
40
NADP+
Aflatoxin exo-8,9-oxide
H2O
H+
Ethylene
Oxygen
NADPH
Cytochrome P450 1A1
43, 44
NADP+
Ethylene oxide
H2O
H+
Oxygen
Tolbutamide
NADPH
Cytochrome P450 2C9
49
NADP+
4-hydroxytolbutamide
H2O
Oxygen
H+
Omeprazole
NADPH
Cytochrome P450 2C19
46
NADP+
5-hydroxyomeprazole
H2O
H+
NADPH
Paclitaxel
Oxygen
Cytochrome P450 2C8
37
NADP+
6-hydroxypaclitaxel
H2O
H+
NADPH
Phenytoin
Oxygen
Cytochrome P450 2C18
45
NADP+
4-hydroxyphenytoin
H2O
din H2
9-cis-retinoic acid
Oxygen
H+
NADPH
71
H2O
4-hydroxy-9-cis-retinoic acid
NADP+
Cytochrome P450 26C1
H+
Oxygen
Arachidonate
NADPH
75
NADP+
19-hydroxyarachidonic acid
H2O
Cytochrome P450 2U1-1
NADPH
H+
Indole
Oxygen
76
H2O
Oxindole
NADP+
Cytochrome P450 2W1
H+
NADPH
Testosterone
Oxygen
77, 78
H2O
6beta-hydroxytestosterone
NADP+
CYP3A43


Cytochrome P450 2E1
Cytochrome P450 26B1
Cytochrome P450 26
CYP2S1
Paraxanthine
Formaldehyde
NADP+
H2O
4-Aminobiphenyl
NADPH
H+
Oxygen
53, 54
H2O
N-Hydroxy-4-aminobiphenyl
NADP+
Oxygen
Hydrogen
NADP+
Acetaminophen (TN TYLENOL)
57
NADPH
H2O
N-Acetylbenzoquinoneimine
H+
Oxygen
NADPH
Benzene
58
H2O
NADP+
Phenol
Carbon tetrachloride
64
Trichloromethyl radical
Chloride
NADPH
H+
Ethanol
Oxygen
59-61
NADP+
Acetaldehyde
H2O
Oxygen
NADPH
H+
Halothane
62, 63
NADP+
H2O
Trifluoroacetylchloride
Hydrogen bromide
NADPH
H+
Vinyl chloride
Oxygen
55, 56
NADP+
2-Chloroethylene oxide
H2O
NADPH
Oxygen
H+
All-trans-retinoic acid
72
73
NADPH
Oxygen
H+
74
H2O
NADP+
H2O
NADP+
4-hydroxy-all-trans-retinoic acid
Cytochrome 4F11
NADPH
H+
Oxygen
3-hydroxypalmitate
79
NADP+
H2O
3,16-dihydroxypalmitate
CYP2


peroxisomal matrix
N-acetylspermine
Oxygen
H2O
90
H2O2
Spermidine
3-acetamidopropanal
PAO-FAD complex
N-acetylspermidine
Oxygen
H2O
90
H2O2
3-acetamidopropanal
Putrescine
H2O
Spermine
Oxygen
Spermidine Oxidase (SMOX)
91, 92
3-aminopropanal
Spermidine
H2O2
2-Phenylethylamine
H2O
Oxygen
NH3
Phenylacetaldehyde
H2O2
87
H2O
5-Hydroxytryptamine
Oxygen
88
NH3
5-Hydroxyindoleacetaldehyde
H2O2
MAOA-FAD complex
P450
Oxygen
H+
NADPH
69, 70
CYP27B1
H2O
NADP+
Calcitriol
Oxygen
Vitamin D3
NADPH
H+
2R1
65
Calcidiol
NADP+
H2O
Tyramine
Oxygen
H2O
89
MAOB-FAD complex
NH3
H2O2
4-Hydroxyphenylacetaldehyde
mitochondrial intermembrane space
20alpha,22beta dihydroxycholesterol
H+
NADPH
Oxygen
25, 26
CYP11A1
Isocaproic aldehyde
Pregnenolone
H2O
NADP+
CYP11B1
H+
11-deoxycortisol
Oxygen
NADPH
15, 16
H2O
Cortisol
NADP+
CYP11B2
Oxygen
H+
NADPH
11-deoxycorticosterone
15, 27
H2O
Corticosterone
NADP+
mitochondrial matrix
Cytochrome P450 27
Cholesterol
NADPH
Oxygen
H+
24
NADP+
27-hydroxycholesterol
H2O
alcohol dehydrogenase complex
Ethanol
NAD+
97-107
NADH
H+
Acetaldehyde
108
H2O
NAD+
5, 93
aldehyde dehydrogenase 1A1 tetramer
5
H+
NADH
AMP
Acetyl-CoA
pyrophosphate
4
Acetyl-coenzyme A synthetase, cytoplasmic
4
Acetate
ATP
CoA-SH
NAD+
aldehyde dehydrogenase, mitochondrial, tetramer
Acetaldehyde
H2O
93-95
NADH
H+
ATP
Acetate
CoA-SH
ACSS1
96
pyrophosphate
Acetyl-CoA
AMP
NADPH
1,25-dihydroxyvitamin D3
Oxygen
H+
66-68
NADP+
1,24,25-trihydroxyvitamin D3
H2O
CYP24A1