FIG. 1A

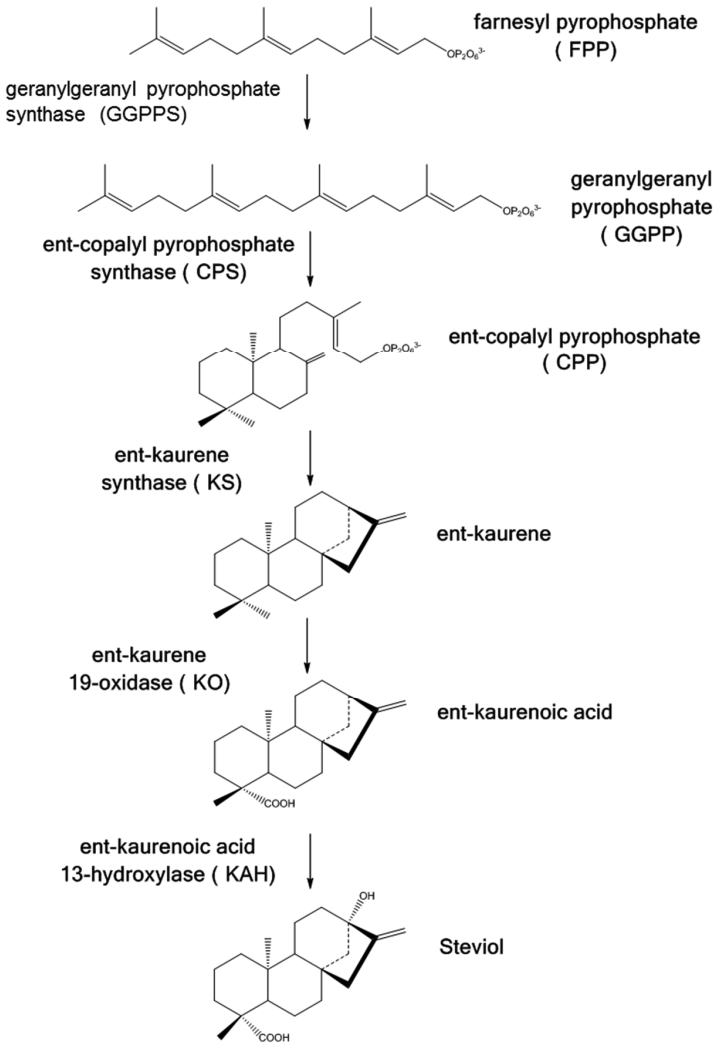

farnesyl pyrophosphate
(FPP)
geranylgeranyl pyrophosphate
synthase (GGPPS)
geranylgeranyl
pyrophosphate
(GGPP)
ent-copalyl pyrophosphate
synthase (CPS)
ent-copalyl pyrophosphate
(CPP)
ent-kaurene
synthase (KS)
ent-kaurene
ent-kaurene
19-oxidase (KO)
ent-kaurenoic acid
ent-kaurenoic acid
13-hydroxylase (KAH)
Steviol
OH
COOH
COOH

FIG. 1B

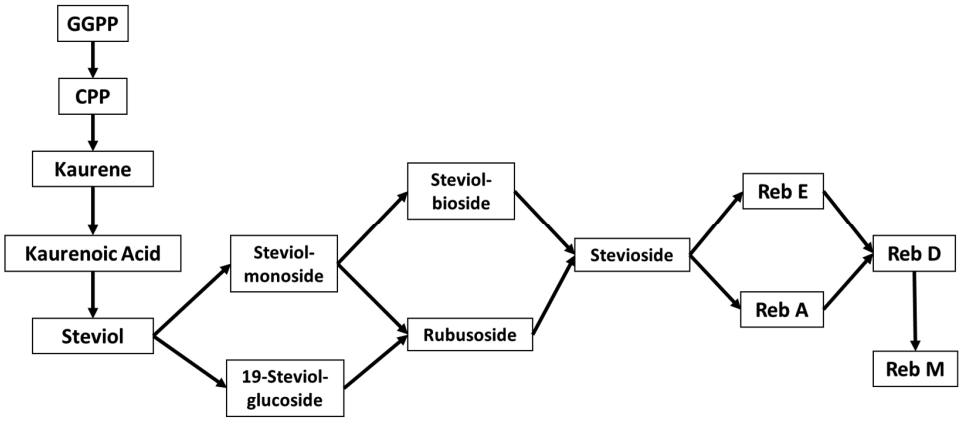

GGPP
CPP
Kaurene
Kaurenoic Acid
Steviol
Steviol-monoside
19-Steviol-glucoside
Steviol-bioside
Rubusoside
Stevioside
Reb E
Reb A
Reb D
Reb M

FIG. 1C

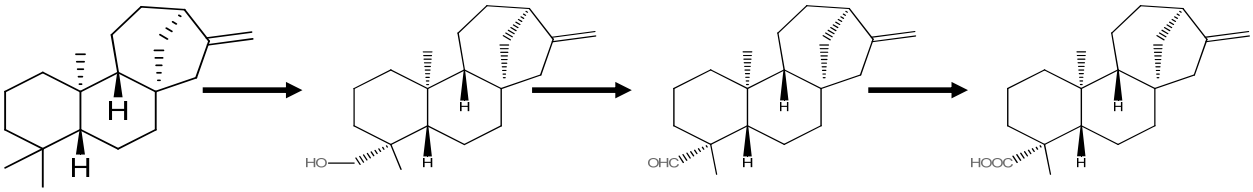
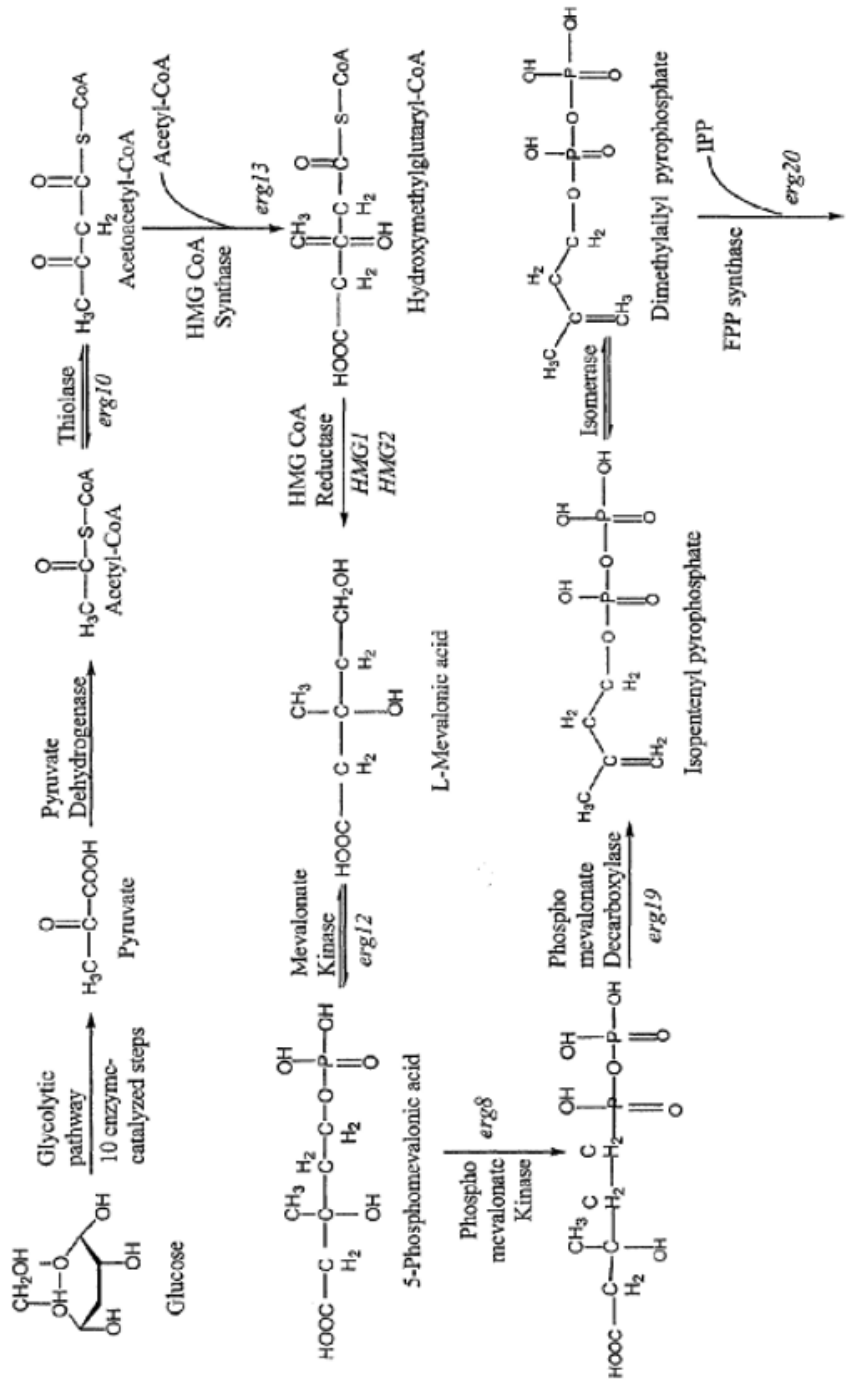

ent-kaurene
kaurenol
kaurenal
Kaurenoic acid

FIG. 1D


Glucose
Glycolytic pathway
10 enzymic-catalyzed steps
Pyruvate
Pyruvate Dehydrogenase
Acetyl-CoA
Thiolase
erg10
Acetoacetyl-CoA
Acetyl-CoA
HMG CoA Synthase
erg13
Hydroxymethylglutaryl-CoA
HMG CoA Reductase
HMG1
HMG2
L-Mevalonic acid
Mevalonate Kinase
erg12
5-Phosphomevalonic acid
Phospho mevalonate Kinase
erg8
Phospho mevalonate Decarboxylase
erg19
Isopentenyl pyrophosphate
Isomerase
Dimethylallyl pyrophosphate
FPP synthase
IPP
erg20

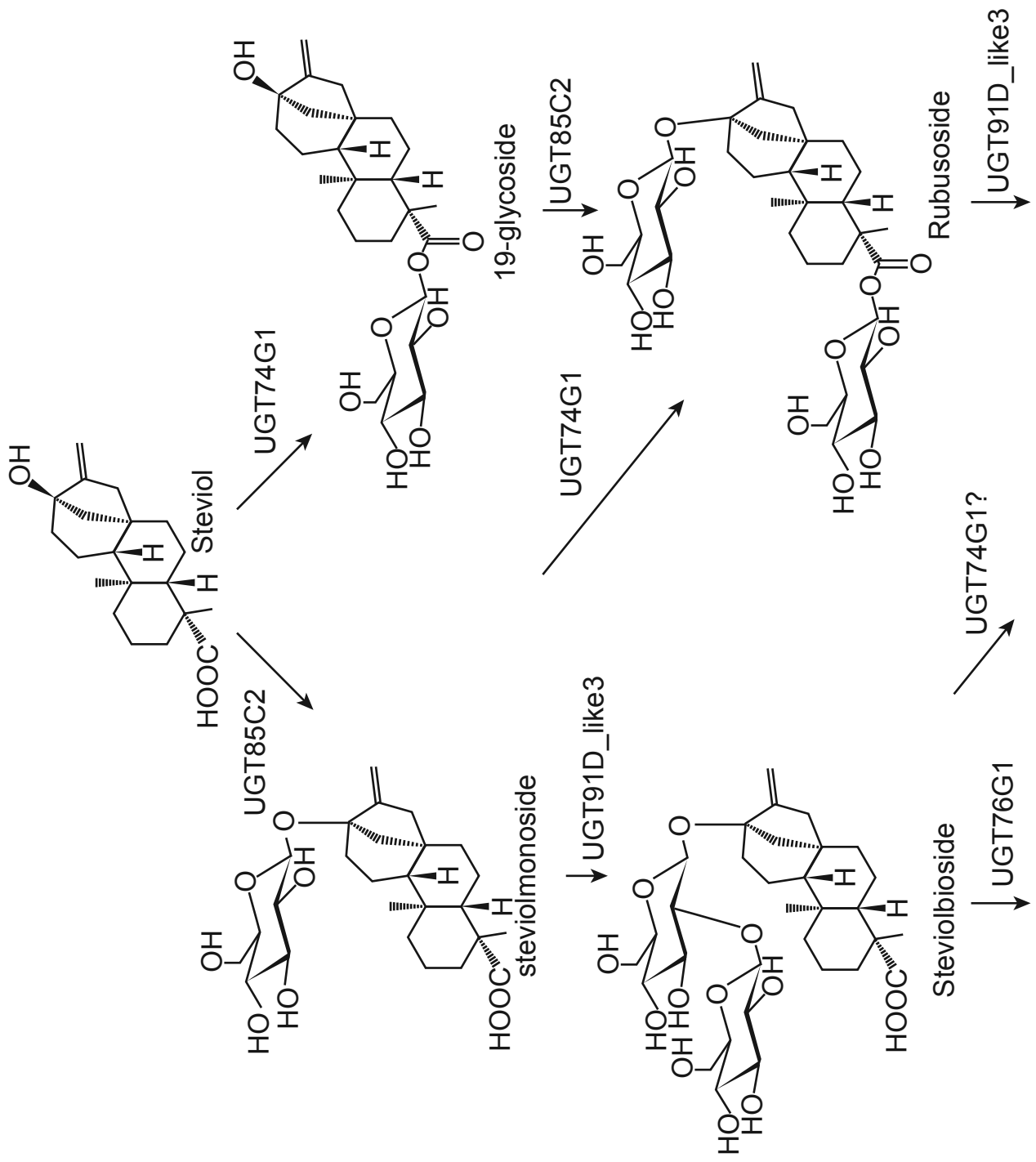

Steviol
UGT74G1
19-glycoside
UGT85C2
Rubusoside
UGT91D_like3
UGT74G1?
Stevioibioside
UGT76G1
UGT85C2
steviolmonoside
UGT91D_like3

FIG. 2

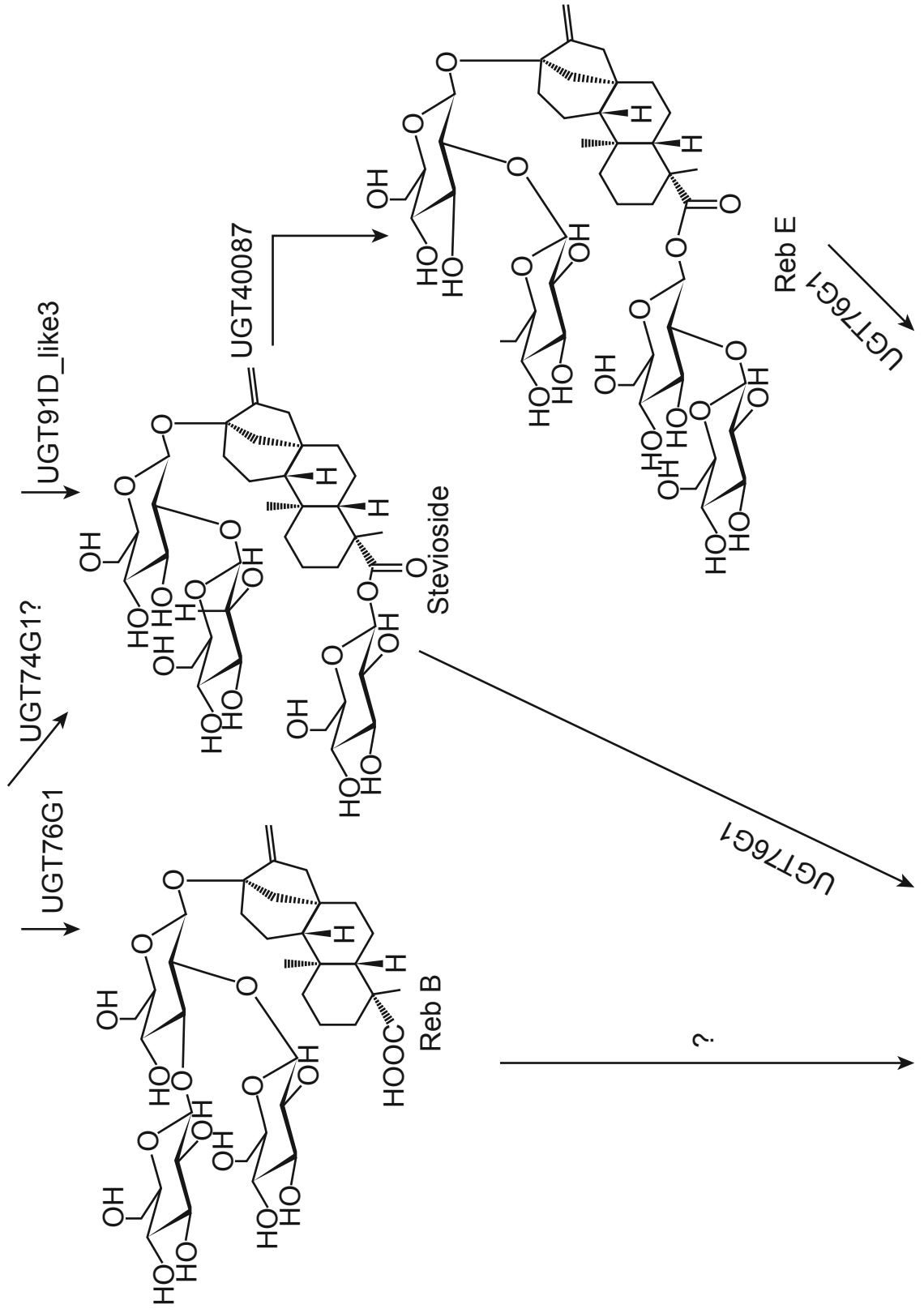

UGT76G1
UGT74G1?
UGT91D_like3
UGT40087
Stevioside
Reb B
Reb E
UGT76G1
UGT76G1
?

FIG. 2 (Cont. 1)

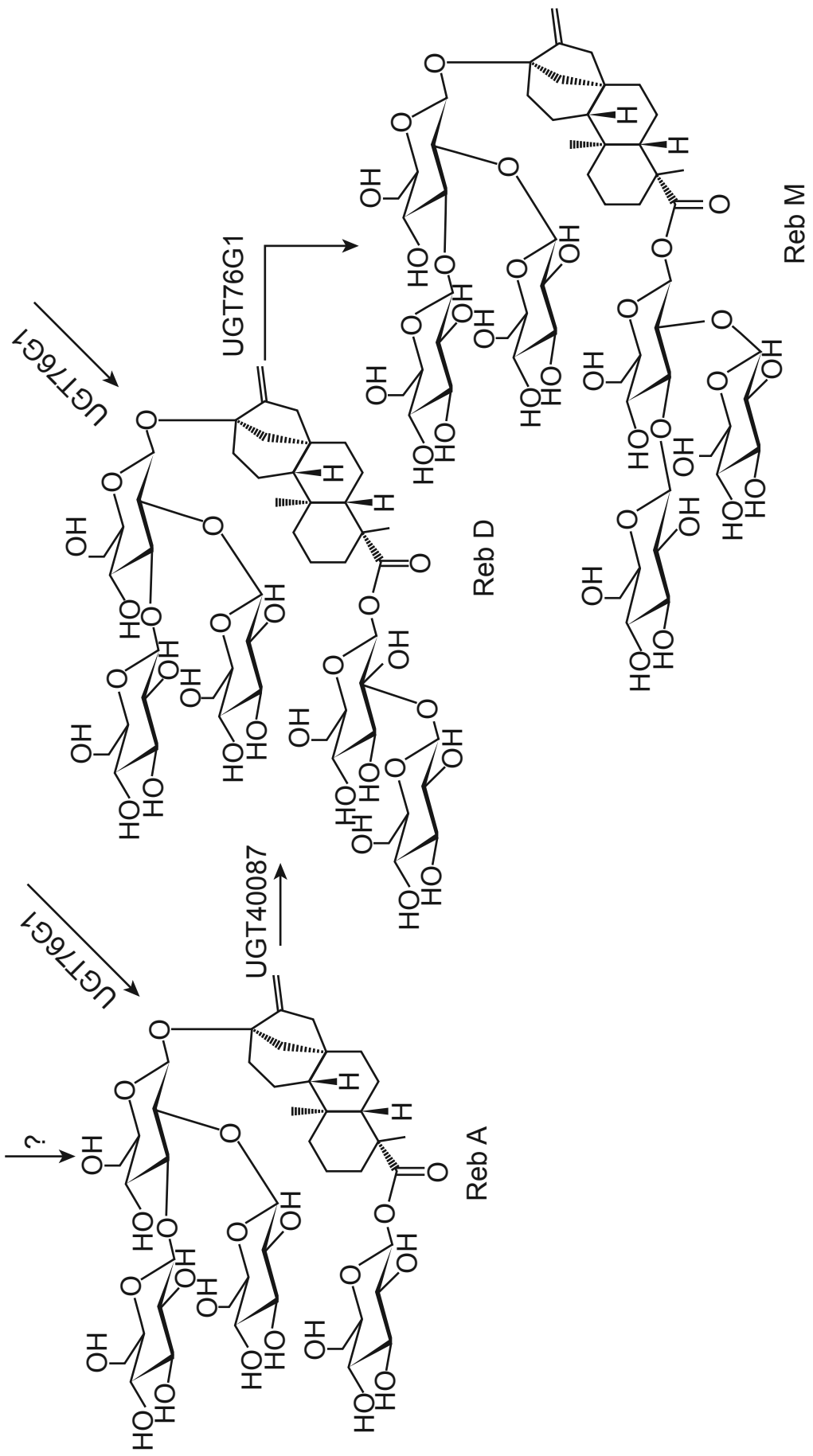


FIG. 2 (Cont. 2)

FIG. 3

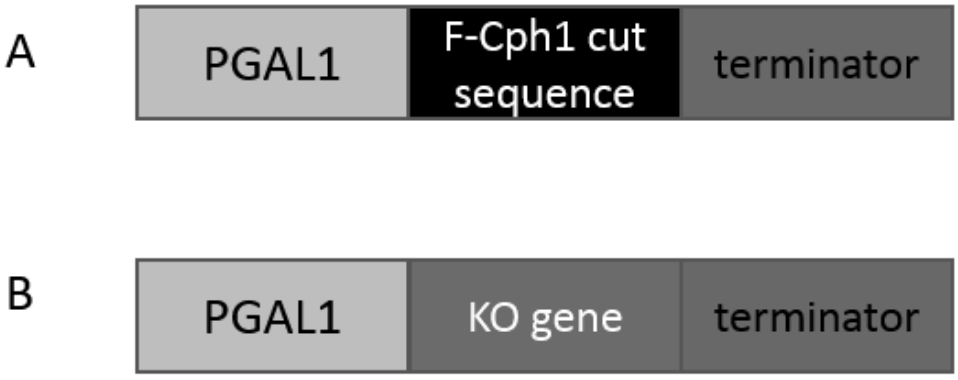

A
PGAL1
F-Cph1 cut sequence
terminator
B
PGAL1
KO gene
terminator

FIG. 4

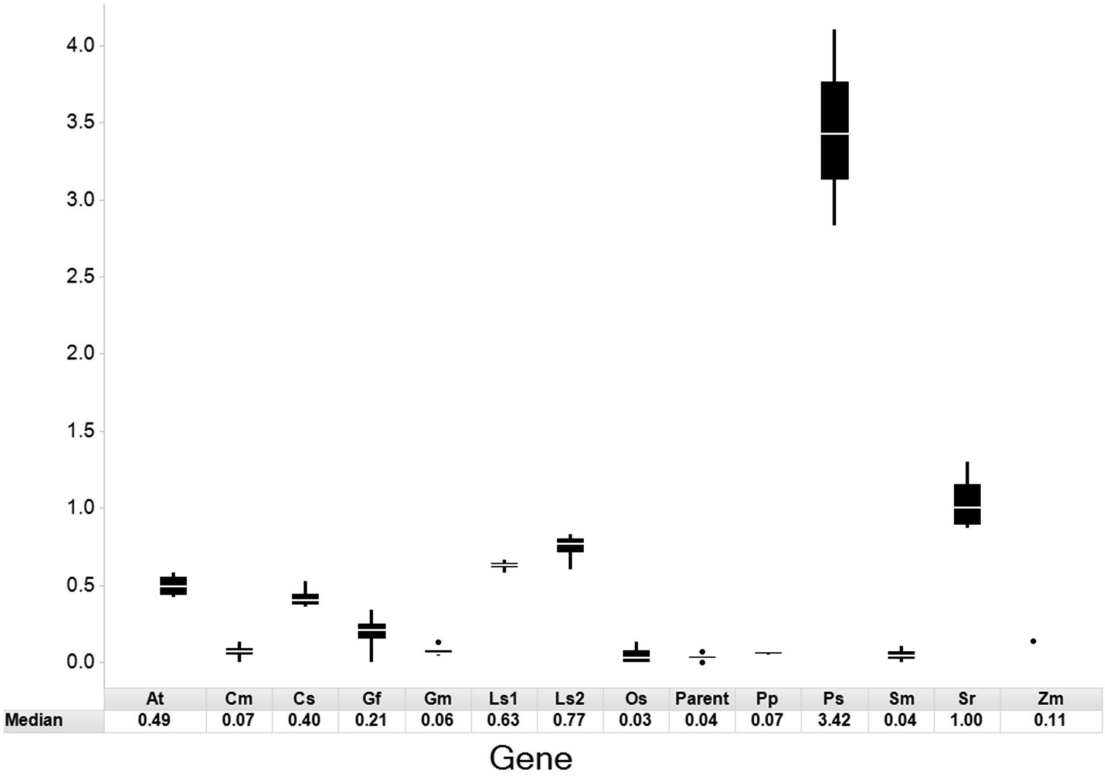

4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
At Cm Cs Gf Gm Ls1 Ls2 Os Parent Pp Ps Sm Sr Zm
Median 0.49 0.07 0.40 0.21 0.06 0.63 0.77 0.03 0.04 0.07 3.42 0.04 1.00 0.11
Gene

FIG. 5

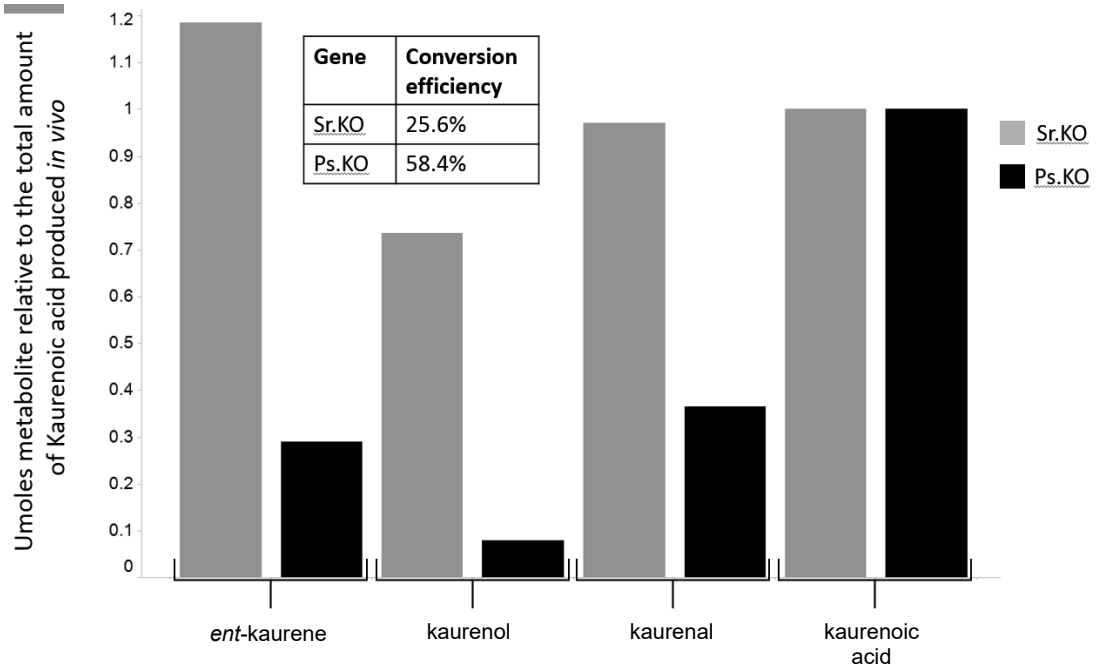
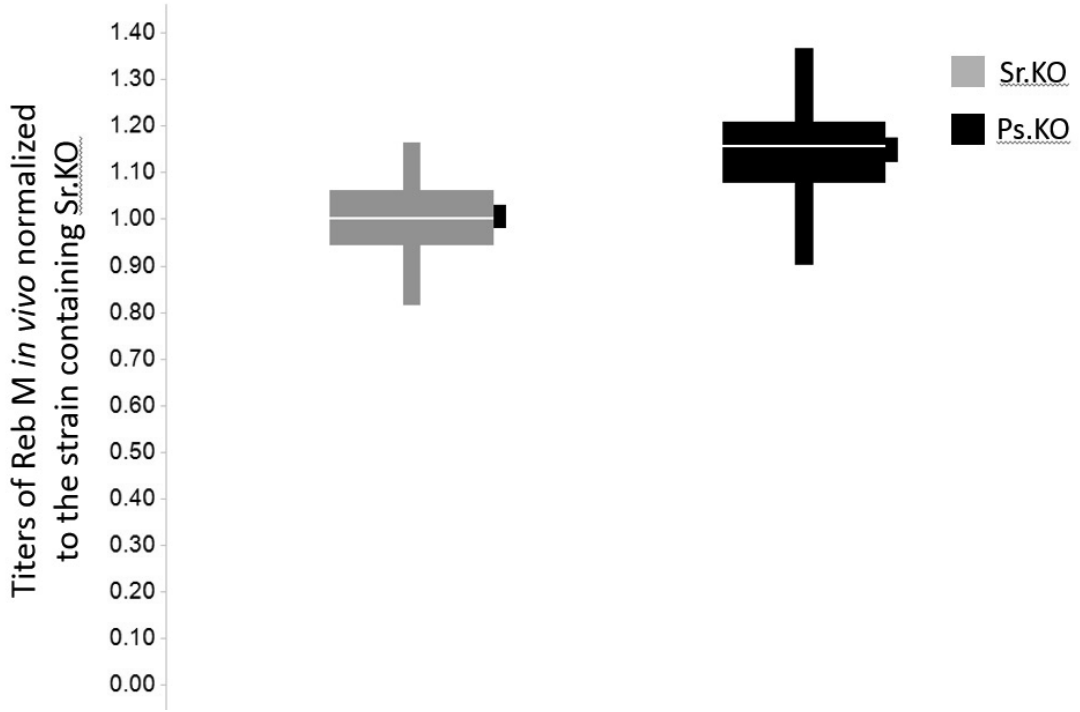

Umoles metabolite relative to the total amount of Kaurenoic acid produced *in vivo*
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Gene
Conversion efficiency
Sr.KO
25.6%
Ps.KO
58.4%
Sr.KO
Ps.KO
ent-kaurene
kaurenol
kaurenal
kaurenoic acid

FIG. 6


Titers of Reb M *in vivo* normalized to the strain containing Sr.KO
1.40
1.30
1.20
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Sr.KO
Ps.KO