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Table S1.1: Reaction network including the atom transitions in the notation of Wiechert et al (2001).

Flux	Reaction			
vFeedB	FeedB	> Glc_ec		
	#abcdef	#abcdef		
uptGlc	Glc_ec	> Glc6P		
	#abcdef	#abcdef		
leakGlc	Glc_ic	> Glc_ec		
	#abcdef	#abcdef		
upt1	Glc_ic	> Glc6P		
	#abcdef	#abcdef		
Tre1	Glc6P	+ UDPG	> T6Pa	+ T6Pb
	#abcdef	#ABCDEF	#abcdef	#ABCDEF
Tre2	T6Pa	<> Treh		
	#abcdef	#abcdef		
Tre2c	T6Pb	<> Treh		
	#abcdef	#abcdef		
Tre3	Treh	> Glc_ic		
	#abcdef	#abcdef		
Tre4	Treh_ec	> Glc_ec		
	#abcdef	#abcdef		
Gly1	Glc6P	<> GOneP		
	#abcdef	#abcdef		
Gly2	Glyco	+ Glyco	> GOneP	+ Glc_ic
	#abcdef	#ABCDEF	#abcdef	#ABCDEF
Gly3	GOneP	> UDPG		
	#abcdef	#abcdef		
Gly4	UDPG	> Glyco		
	#abcdef	#abcdef		
emp1	Glc6P	<> Fru6P		
	#abcdef	#abcdef		
emp2	Fru6P	<> FBP		
	#abcdef	#abcdef		
emp3	FBP	<> DHAP	+ GA3P	
	#abcdef	#cba	#def	
emp4	DHAP	<> GA3P		
	#abc	#abc		
emp5	GA3P	<> PG3		
	#abc	#abc		
emp6	PG3	<> PG2		
	#abc	#abc		
emp7a	PG2	<> PEP		
	#abc	#abc		
emp7b	PEP	> PYR_cyt		
	#abc	#abc		
pyr_t	PYR_cyt	> PYR_mit		
	#abc	#abc		
emp8	PYR_mit	+ CO2	> OAA	
	#abc	#d	#abcd	
emp9	PYR_cyt	> Ald	+ CO2	
	#abc	#ab	#c	
emp10	Ald	> EtOH		
	#ab	#ab		
emp11	Ald	> Acetate		
	#ab	#ab		
emp12	Acetate	> ACCOA		
	#ab	#ab		
emp13	Fru6P	<> M6P		
	#abcdef	#abcdef		
emp14	DHAP	<> G3P		
	#abc	#abc		
deg_prod_in	prod	> ACCOA		
	#AB	#AB		
deg_prod_out	ACCOA	> prod		
	#AB	#AB		
aa_ala	PYR_cyt	<> Ala		
	#abc	#abc		
ppp1	Glc6P	> PG6		
	#abcdef	#abcdef		
ppp2	Rul5P	<> Xyl5P		
	#abcde	#abcde		
ppp3	Rul5P	<> Rib5P		
	#abcde	#abcde		
ppp4	Xyl5P	+ Ery4P	<> GA3P	+ Fru6P
	#ABCDE	#abcd	#CDE	#ABabcd
ppp5	Xyl5P	+ Rib5P	<> Sed7P	+ GA3P
	#ABCDE	#abcde	#Ababcde	#CDE
ppp6	GA3P	+ Sed7P	<> Ery4P	+ Fru6P
	#ABC	#abcdefg	#defg	#abcABC
ppp7	PG6	> CO2	+ Rul5P	
	#abcdef	#a	#bcdef	
mRNA_exchange	Rib5P	<> mRNA		
	#abcde	#abcde		
TCA1	PYR_mit	> ACCOA	+ CO2	
	#ABC	> #BC	#A	
TCA2	ACCOA	+ OAA	> CIT_mit	
	#AB	#abcd	#dcbaBA	
TCA3	CIT_mit	<> isoCIT		
	#ABCDEF	> #ABCDEF		
TCA4	isoCIT	> AKG	+ CO2	
	#ABCDEF	> #ABCEF	#D	
TCA5	AKG	> SUCC	+ CO2	
	#ABCDE	#BCDE	#A	
TCA5B	AKG	> SUCC	+ CO2	
	#ABCDE	#EDCB	#A	
TCA6	SUCC	<> FUM		
	#ABCD	#ABCD		
TCA6B	SUCC	<> FUM		
	#ABCD	#DCBA		
TCA7	FUM	<> MAL		
	#ABCD	#ABCD		
TCA8	MAL	<> OAA		
	#ABCD	#ABCD		
aa_glu	AKG	<> Glu		
	#ABCDE	> #ABCDE		
aa_asp	OAA	<> Asp		
	#ABCD	#ABCD		
GLOX1	isoCIT	> gliox	+ SUCC	
	#ABCDEF	> #AB	#DCEF	
GLOX2	ACCOA	+ gliox	> MAL	
	#AB	#ab	#ABab	
Treh_trans	Treh	<> Treh_ec		
	#abcdef	#abcdef		
EtOH_trans	EtOH	<> EtOH_ec		
	#ab	#ab		
Acetate_trans	Acetate	> Acetate_ec		
	#ab	#ab		
v_wo_Glc	Glc_ec	> Glc_wo		
	#abcdef	#abcdef		
v_wo_EtOH	EtOH_ec	> EtOH_wo		
	#ab	#ab		
v_wo_Acetate	Acetate_ec	> Acetate_wo		
	#ab	#ab		
v_wo_Treh	Treh_ec	> Treh_wo		
	#abcdef	#abcdef		
CO2out1	CO2	> CO2_ec		
	#a	#a		
BIO_G6P	Glc6P	> Glc6P_bm		
	#ABCDEF	#ABCDEF		
BIO_F6P	Fru6P	> Fru6P_bm		
	#ABCDEF	#ABCDEF		
BIO_AcCoA	ACCOA	> ACCOA_bm		
	#BC	#BC		
BIO_OAA	OAA	> OAA_bm		
	#ABCD	#ABCD		
BIO_E4P	Ery4P	> Ery4P_bm		
	#ABCD	#ABCD		
BIO_R5P	Rib5P	> Rib5P_bm		
	#ABCDE	#ABCDE		

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Flux		Reaction		
BIO_G3P	G3P	> G3P_bm		
	#ABCD	#ABCD		
BIO_Glu	Glu	> Glu_bm		
	#ABCDE	#ABCDE		
BIO_Pyr	PYR_mit	> PYR_bm		
	#ABC	#ABC		
BIO_PG3	PG3	> PG3_bm		
	#abc	#abc		
BIO_PEP	PEP	> PEP_bm		
	#abc	#abc		
BIO_Tre	Treh	> Treh_bm		
	#abcdef	#abcdef		
BIO_Glyc	Glyco	> Glyco_bm		
	#abcdef	#abcdef		
BIO_Asp	Asp	> Asp_BM		
	#abcd	#abcd		
BIO_Ala	Ala	> Ala_BM		
	#abc	#abc		
BIO_Val	Val	> Val_BM		
	#abcde	#abcd		
FA_metabolism	G3P	<> Fatty_Acid		
	#abc	#abc		
aa_val	PYR_mit	+ PYR_mit	> Val	+ CO2
	#abc	#ABC	#abcBC	#A

Table S1.2: Precursor requirements for biomass formation ($\mu mol/g_{DW}$) were calculated based on the biomass composition reported in Lange and Heijnen (2001). Unfortunately there are no measurements available for D = 0.3 h^{-1}, we assumed that the biomass composition is comparable to D = 0.211 h^{-1}. Positive coefficients indicate production of the respective metabolite.

	Dilution rate (D)		
Precursor Metabolite	0.052	0.107	0.211
Alanine	-422	-446	-480
Glutamate	-805	-850	-915
Aspartate	-826	-873	-939
Valine	-241	-255	-274
Pyruvate	-643	-680	-732
PG3	-716	-780	-833
R5P	-792	-889	-941
AcCoA	-2616	-2158	-2361
PEP	-271	-286	-308
E4P	-142	-150	-161
OAA	-76	-109	-109
G3P	-92	-72	-79
G6P	-1037	-872	-1216
F6P	-519	-436	-608
CO2	864	936	1001
NADH	1240	1338	1432
NADPH	-10548	-10098	-10914