S2 Table. Reactions included in the model. This table describes all the reactions included in the metabolic network used in the model and indicates abbreviation, full name and stoichiometry. In reaction stoichiometry, ↔ denotes reversible reactions and → denotes irreversible reactions.

Reaction id	Reaction name	Reaction stoichiometry
aatc	Aspartate aminotransferase (Cytosolic)	cAsp + cKg ↔ cGlu + cOAA
aatm	Aspartate aminotransferase (Mitochondrial)	mAsp + mKg ↔ mGlu + mOAA
aco	Aconitase	mCit ↔ miCit
acoacar	Acetyl-CoA carboxylase	cACoA + cATP + CO2 → cADP + cPi + MalCoA
adk	Adenylate kinase	AMP + cATP ↔ 2cADP
aldo1	Aldolase (1)	Fru16bP ↔ DhaP + GraP
aldo2	Aldolase (2)	Fru1P ↔ DhaP + Gra
aldo3	Aldolase (3)	Fru16bP + Gra ↔ Fru1P + GraP
aldo_inv1	Aldolase invisible (1)	Fru16bP + GraP ↔ Fru16bP + GraP
aldo_inv2	Aldolase invisible (2)	Fru1P + Gra ↔ Fru1P + Gra
aspglumtrans	Aspartate/Glutamate carrier	cGlu + mAsp ↔ cAsp + mGlu
atpase	Atpase	cATP → cADP + cPi
atpmtrans	Mitochondrial ATP/ADP carrier	cADP + mATP ↔ cATP + mADP
box	β-Oxidation	cATP + 7CoQ + cPalm + 8mCoA + 7mNAD → AMP + 7CoQH + 8mACoA + 7mNADH + PPi
citly	Citrate lyase	cATP + cCit + cCoA ↔ cACoA + cADP + cOAA + cPi
citmtr	Citrate carrier	cMal + mCit ↔ cCit + mMal
cmdh	Malate dehydrogenase (Cytosolic)	cMal + cNAD ↔ cNADH + cOAA
cndk1	Nucleoside diphosphate kinase 1(Cytosolic)	cATP + cGDP ↔ cADP + cGTP
cndk2	Nucleoside diphosphate kinase 2(Cytosolic)	cATP + UDP ↔ cADP + UTP
coqhoxi	Ubiquinol Oxidase	CoQH + 2mADP + 2mPi → CoQ + 2mATP
cs	Citrate synthase	mACoA + mOAA → mCit + mCoA
dic	Dicarboxylate Carrier	cPi + mMal ↔ cMal + mPi
eno	Enolase	PG2 ↔ PEP
fasyn	Fatty acid synthesis	cACoA + 7MalCoA + 14NADPH → 8cCoA + cPalm + 14NADP
fbasea1	Fructose 1,6-bisphosphatase (Pool A)	Fru16bP → cPi + Fru6Pa
fbasea2	Fructose 2,6-bisphosphatase (Pool A)	Fru26bPa → cPi + Fru6Pa
fbaseb1	Fructose 1,6-bisphosphatase (Pool B)	Fru16bP → cPi + Fru6Pb
fbaseb2	Fructose 2,6-bisphosphatase (Pool B)	Fru26bPb → cPi + Fru6Pb
fh	Fumarate Hydratase	Fum ↔ mMal
fruhk	Fructokinase	cATP + cFru → cADP + Fru1P
frutr	Fructose carrier	eFru ↔ cFru
g6pasea	Glucose-6-Phosphatase (Pool A)	Glc6Pa → cGlc + cPi

g6paseb	Glucose-6-Phosphatase (Pool B)	Glc6Pb → cGlc + cPi
g6pdh	Glucose-6-Phosphate deshydrogenase	Glc6Pa + NADP → NADPH + PGn
gapdh	Glyceraldehyde 3-phosphate dehydrogenase	cNAD + cPi + GraP ↔ bPG13 + cNADH
gka	Glucokinase (Pool A)	cATP + cGlc → cADP + Glc6Pa
gkb	Glucokinase (Pool B)	cATP + cGlc → cADP + Glc6Pb
glctr	Glucose carrier	eGluc ↔ cGlc
glutr	Glutamate carrier	eGlut ↔ cGlu
glyc3pcdh	Glycerol-3-phosphate dehydrogenase (NAD)	cNAD + Glyc3P ↔ cNADH + DhaP
glyc3pmdh	Glycerol-3-phosphate dehydrogenase (Ubiquinone)	CoQ + Glyc3P → CoQH + DhaP
gp	Glycogen Phosphorylase	cPi + GlyGlc → Glc1P
gpia	Glucose-6-Phosphate-Isomerase (Pool A)	Glc6Pa ↔ Fru6Pa
gpib	Glucose-6-Phosphate-Isomerase (Pool A)	Glc6Pb ↔ Fru6Pb
gs	Glycogen synthase	UDPGlc → GlyGlc + UDP
idh	Isocitrate dehydrogenase	miCit + mNAD ↔ CO2 + mKg + mNADH
kdh	α-Ketoglutarate dehydrogenase	mCoA + mKg + mNAD ↔ CO2 + mNADH + SuCoA
lactr	Lactate carrier	eLac ↔ cLac
ldh	Lactate dehydrogenase	cLac + cNAD ↔ cNADH + cPyr
malic	Malic enzyme	cMal + NADP ↔ CO2 + cPyr + NADPH
malkgmtrans	α-Ketoglutarate/Malate carrier	cMal + mKg ↔ cKg + mMal
mmdh	Malate dehydrogenase (Mitochondrial)	mMal + mNAD ↔ mNADH + mOAA
mndk	Nucleoside diphosphate kinase (Mitochondrial)	mATP + mGDP ↔ mADP + mGTP
mpyrtr	Mitochondrial pyruvate carrier	cPyr ↔ mPyr
nadhdh	NADH dehydrogenase	CoQ + mADP + mNADH + mPi → CoQH + mATP + mNAD
pc	Pyruvate Carboxylase	CO2 + mATP + mPyr ↔ mADP + mOAA + mPi
pdh	Pyruvate dehydrogenase	mCoA + mNAD + mPyr → CO2 + mACoA + mNADH
pepck	Phosphoenolpyruvate carboxykinase	cGTP + cOAA ↔ cGDP + CO2 + PEP
pfkla1	Phosphofructokinase 1(Pool A)	cATP + Fru6Pa → cADP + Fru16bP
pfkla2	Phosphofructokinase-2 (Pool A)	cATP + Fru6Pa → cADP + Fru26bPa
pfklb1	Phosphofructokinase 1(Pool B)	cATP + Fru6Pb → cADP + Fru16bP
pfklb2	Phosphofructokinase-2 (Pool B)	cATP + Fru6Pb → cADP + Fru26bPb
pgk	Phosphoglycerate kinase	bPG13 + cADP ↔ cATP + PG3
pglm	Phosphoglucomutase	Glc1P ↔ Glc6Pb
pgm	Phosphoglycerate mutase	PG3 ↔ PG2
pgndh	Phosphogluconate dehydrogenase	NADP + PGn → CO2 + NADPH + Rul5P

pimtr	Phosphate mitochondrial carrier	cPi ↔ mPi
pitr	Phosphate carrier	ePi ↔ cPi
pyrtr	Pyruvate extracellular carrier	ePyr ↔ cPyr
pk	Pyruvate kinase	cADP + PEP → cATP + cPyr
ppase	Pyrophosphatase	PPi → 2cPi
rpi	Ribose-5-phosphate isomerase	Rul5P ↔ Rib5P
rul5pepi	Ribulose-5-phosphate 4-epimerase	Rul5P ↔ Xyl5P
scs	Succinyl-CoA synthetase	mGDP + mPi + SuCoA ↔ mCoA + mGTP + Suc
sdh	Succinate dehydrogenase	CoQ + Suc ↔ CoQH + Fum
ta	Transaldolase	E4P + Fru6Pa ↔ GraP + Sed7P
ta_inv1	Transaldolase invisible (1)	Fru6Pa + GraP ↔ Fru6Pa + GraP
ta_inv2	Transaldolase invisible (2)	E4P + Sed7P ↔ E4P + Sed7P
tim	Triose-phosphate isomerase	DhaP ↔ GraP
tk1	Transketolase (1)	Xyl5P + Rib5P ↔ GraP + Sed7P
tk2	Transketolase (2)	GraP + Fru6Pa ↔ Xyl5P + E4P
tk3	Transketolase (3)	Fru6Pa + Rib5P ↔ E4P + Sed7P
tk_inv1	Transketolase invisible (1)	Xyl5P + Grap ↔ Xyl5P + Grap
tk_inv2	Transketolase invisible (2)	Fru6Pa + E4P ↔ Fru6Pa + E4P
tk_inv3	Transketolase invisible (3)	Rib5P + Sed7P ↔ Rib5P + Sed7P
transa	Transaminase	cKg ↔ cGlu
trik	Triokinase	cATP + Gra → cADP + GraP
ugt	UDP-glucuronosyltransferase	Glc1P + UTP ↔ PPi + UDPGlc