

fopt is the fraction of optimal solutions in the mixed optima or condition-specific optima that utilize a particular reaction (non-zero flux)

fenv is the fraction of environments (n=136) that use a reaction in either a suboptimal or optimal solution. Bold values are used to highlight reactions that are only used in suboptimal solutions.

shading of fopt glucose aerobic and glucose anaerobic corresponds to that used in Figure 5 (and is used to designate predicted changes in expression across the two conditions).

Abbr	Reaction	Subsystem	fopt			Variable Conditions	fenv	
			Mixed Optima	Glucose Aerobic	Glucose Anaerobic		SubOptimal	Optimal
12PPDt	12ppd-S[e] <==> 12ppd-S[c]	Transport, Extracellular	0.0088	0	0	0	0.045	0.011
2DGLCNRx	[c]2dhgln + h + nadh --> glcn + nad	Alternate Carbon Metabolism	0	0	0	0	0	0
2DGLCNRy	[c]2dhgln + h + nadph --> glcn + nadp	Alternate Carbon Metabolism	0	0	0	0	0	0
2DGULRx	[c]2dhgln + h + nadh --> idon-L + nad	Alternate Carbon Metabolism	0	0	0	0	0	0
2DGULRy	[c]2dhgln + h + nadph --> idon-L + nadp	Alternate Carbon Metabolism	0	0	0	0	0	0
3HCINNMH	[c]3hcinnm + h + nadh + o2 --> dhcinnm + h2o + nad	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
3HPPPNH	[c]3hpppn + h + nadh + o2 --> dhpppn + h2o + nad	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
4HTHRS	[c]h2o + phthr --> 4hthr + pi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
5DGLCNR	[c]5dglcn + h + nadph <==> glcn + nadp	Alternate Carbon Metabolism	0.0159	0	0	0	0.045	0.011
A5PISO	[c]ru5p-D <==> ara5p	Alternate Carbon Metabolism	1	1	1	0	1	1
AACPS1	[c]ACP + atp + ttdca --> amp + myrsACP + ppi	Cell Envelope Biosynthesis	0.0088	0	0	0	1	0.011
AACPS2	[c]ACP + atp + ttdcea --> amp + ppi + tdeACP	Cell Envelope Biosynthesis	0	0	0	0	1	0
AACPS3	[c]ACP + atp + hdca --> amp + palmACP + ppi	Cell Envelope Biosynthesis	0.0088	0	0	0	1	0.011
AACPS4	[c]ACP + atp + hdcea --> amp + hdeACP + ppi	Cell Envelope Biosynthesis	0	0	0	0	1	0
AACPS5	[c]ACP + atp + ocdcea --> amp + octeACP + ppi	Cell Envelope Biosynthesis	0	0	0	0	1	0
AADDGT	[c]dtdp4aaddg + unagamu --> dtdp + h + unagamuf	Cell Envelope Biosynthesis	0	0	0	0	0	0
AB6PGH	[c]arbt6p + h2o --> g6p + hqn	Alternate Carbon Metabolism	0	0	0	0	0	0
ABTA	[c]4abut + akglu --> glu-L + sucsal	Arginine and Proline Metabolism	0.0176	0	0	0	1	0.023
ABUTD	[c]4abutn + h2o + nad --> 4abut + (2) h + nadh	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
ABUTt2	4abut[e] + h[e] --> 4abut[c] + h[c]	Transport, Extracellular	0	0	0	0	0	0
ACACCT	[c]acac + accoa --> aacoa + ac	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
ACACT1r	[c](2) accoa <==> aacoa + coa	Membrane Lipid Metabolism	0.0177	0	0	0	0.023	0.023
ACACT2	acac[e] + h[e] <==> acac[c] + h[c]	Putative Transporters	0.0088	0	0	0	0.011	0.011
ACALDi	[c]acald + coa + nad --> accoa + h + nadh	Alternate Carbon Metabolism	0.0620	0	0	18	1	0.136
ACALDt	acald[e] <==> acald[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
ACBIPGT	[c]adocbip + gtp + h --> agdpcbi + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ACCOACr	[c]accoa + atp + hco3 <==> adp + h + malcoa + pi	Membrane Lipid Metabolism	1	1	1	0	1	1
ACCOAL	[c]atp + coa + ppa --> adp + pi + ppcoa	Alternate Carbon Metabolism	0	0	0	0	0	0
ACGAMT	[c]uacgam + udcpp --> ump + unaga	Cell Envelope Biosynthesis	0	0	0	0	0	0
ACGApts	acgam[e] + pep[c] --> acgam6p[c] + pyr[c]	Transport, Extracellular	0.0125	0	0	0	0.011	0.011
ACGK	[c]acglu + atp --> acg5p + adp	Arginine and Proline Metabolism	0.9824	1	1	0	1	0.977
ACGS	[c]accoa + glu-L --> acglu + coa + h	Arginine and Proline Metabolism	0.9824	1	1	0	1	0.977
ACHBS	[c]2obut + h + pyr --> 2ahbut + co2	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
ACKr	[c]ac + atp <==> actp + adp	Pyruvate metabolism	1	1	1	0	1	1
ACLS	[c]h + (2) pyr --> alac-S + co2	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
ACMAMUT	[c]uacmamu + unaga --> h + udp + unagamu	Cell Envelope Biosynthesis	0	0	0	0	0	0
ACMANApts	acmana[e] + pep[c] --> acmanap[c] + pyr[c]	Transport, Extracellular	0.0131	0	0	0	0.011	0.011
ACNAMt2	acnam[e] + h[e] --> acnam[c] + h[c]	Transport, Extracellular	0.0145	0	0	0	0.011	0.011
ACNML	[c]acnam --> acmana + pyr	Alternate Carbon Metabolism	0.0145	0	0	0	0.011	0.011
ACOATA	[c]ACP + accoa <==> acACP + coa	Membrane Lipid Metabolism	0.4535	0.344	0.471	136	1	1

ACODA	[c]acorn + h2o --> ac + orn	Arginine and Proline Metabolism	0.9824	1	1	0	1	0.977
ACONMT	[c]acon-T + amet --> aconm + ahcys	Unassigned	0	0	0	0	0	0
ACONT	[c]cit <==> icit	Citrate Cycle (TCA)	1	1	1	0	1	1
ACOTA	[c]acorn + akg <==> acg5sa + glu-L	Arginine and Proline Metabolism	0.9824	1	1	0	1	0.977
ACPS1	[c]apoACP + coa --> ACP + h + pap	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ACS	[c]ac + atp + coa --> accoa + amp + ppi	Pyruvate metabolism	0	0	0	0	1	0
Act2r	ac[e] + h[e] <==> ac[c] + h[c]	Transport, Extracellular	0.2326	0	1	0	1	0.011
ADA	[c]adn + h + h2o --> ins + nh4	Nucleotide Salvage Pathways	0.0125	0	0	4	1	0.023
ADCL	[c]4adcho --> 4abz + h + pyr	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
ADCS	[c]chor + gln-L --> 4adcho + glu-L	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
ADD	[c]ade + h + h2o --> hxn + nh4	Nucleotide Salvage Pathways	0.0106	0	0	4	1	0.023
ADEt2r	ade[e] + h[e] <==> ade[c] + h[c]	Transport, Extracellular	0.0094	0	0	2	1	0
ADHEr	[c]accoa + (2) h + (2) nadh <==> coa + etoh + (2) nad	Pyruvate metabolism	0.2143	0	1	0	1	0.011
ADK1	[c]amp + atp <==> (2) adp	Nucleotide Salvage Pathways	0	0	0	0	0	0
ADK3	[c]amp + gtp <==> adp + gdp	Nucleotide Salvage Pathways	1	1	1	92	1	1
ADK4	[c]amp + itp <==> adp + idp	Nucleotide Salvage Pathways	0	0	0	0	0	0
ADMDCr	[c]amet + h <==> ametam + co2	Arginine and Proline Metabolism	1	1	1	0	1	1
ADNCYC	[c]atp --> camp + ppi	Nucleotide Salvage Pathways	0	0	0	0	0	0
ADNK1	[c]adn + atp --> adp + amp + h	Nucleotide Salvage Pathways	1	1	1	90	1	1
ADNt2	adn[e] + h[e] --> adn[c] + h[c]	Transport, Extracellular	0	0	0	0	0	0
ADNt2r	adn[e] + h[e] <==> adn[c] + h[c]	Transport, Extracellular	0.0176	0	0	0	1	0.011
ADOCBIK	[c]adocbi + atp --> adocbip + adp + h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ADOCBLS	[c]agdpcbi + rdmbzi --> adocbl + gmp + h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ADPT	[c]ade + prpp --> amp + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
ADSK	[c]aps + atp --> adp + h + paps	Cysteine Metabolism	1	1	1	0	1	1
ADSL1r	[c]dcamp <==> amp + fum	Purine and Pyrimidine Biosynthesis	0.9656	1	1	0	1	0.977
ADSL2r	[c]25aics <==> aicar + fum	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
ADSS	[c]asp-L + gtp + imp --> dcamp + gdp + (2) h + pi	Purine and Pyrimidine Biosynthesis	0.9656	1	1	0	1	0.977
AGDC	[c]acgam6p + h2o --> ac + gam6p	Alternate Carbon Metabolism	0.0400	0	0	0	0.034	0.034
AGMHE	[c]adphep-D,D --> adphep-L,D	Cell Envelope Biosynthesis	1	1	1	0	1	1
AGMT	[c]agm + h2o --> ptrc + urea	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
AGPR	[c]acg5sa + nadp + pi <==> acg5p + h + nadph	Arginine and Proline Metabolism	0.9824	1	1	0	1	0.977
AHC	[c]ahcys + h2o <==> adn + hcys-L	Methionine Metabolism	0	0	0	0	0	0
AHCYSNS	[c]ahcys + h2o --> ade + rhcys	Methionine Metabolism	0	0	0	0	0	0
AICART	[c]10fthf + aicar <==> fprica + thf	Purine and Pyrimidine Biosynthesis	1	1	1	0	1	1
AIRC2	[c]air + atp + hco3 --> 5caiz + adp + h + pi	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
AIRC3	[c]5aizc <==> 5caiz	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
AKGt2r	akg[e] + h[e] <==> akg[c] + h[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
ALAabc	ala-L[e] + atp[c] + h2o[c] --> adp[c] + ala-L[c] + h[c] + pi[c]	Transport, Extracellular	0	0	0	0	1	0
ALAALAr	[c](2) ala-D + atp <==> adp + alaala + h + pi	Cell Envelope Biosynthesis	1	1	1	0	1	1
ALAR	[c]ala-L <==> ala-D	Alanine and aspartate metabolism	1	1	1	0	1	1
ALARi	[c]ala-L --> ala-D	Alanine and aspartate metabolism	0	0	0	0	0	0
ALAt2r	ala-L[e] + h[e] <==> ala-L[c] + h[c]	Putative Transporters	0.0088	0	0	0	1	0.011
ALATA_D2	[c]ala-D + pydx5p --> pyam5p + pyr	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
ALATA_L	[c]akg + ala-L <==> glu-L + pyr	Alanine and aspartate metabolism	1	1	1	0	1	1
ALATA_L2	[c]ala-L + pydx5p --> pyam5p + pyr	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
ALCD19	[c]glyald + h + nadh <==> glyc + nad	Alternate Carbon Metabolism	0.0088	0	0	0	1	0.011
ALDD19x	[c]h2o + nad + pacald --> (2) h + nadh + pac	Alternate Carbon Metabolism	0	0	0	0	0	0
ALDD2x	[c]acald + h2o + nad --> ac + (2) h + nadh	Alternate Carbon Metabolism	0	0	0	0	1	0

ALLTAH	[c]alltt + h2o --> urdglyc + urea
ALLTN	[c]alltn + h2o --> alltt + h
ALLTNt2r	alltn[e] + h[e] <==> alltn[c] + h[c]
ALTRH	[c]altrn --> 2ddgln + h2o
AMALT1	[c]malt + malttr --> glc-D + malttr
AMALT2	[c]malt + malttr --> glc-D + maltpt
AMALT3	[c]malt + maltpt --> glc-D + malthx
AMALT4	[c]malt + malthx --> glc-D + malthp
AMANAPE	[c]acmanap --> acgam6p
AMANK	[c]acmana + atp --> acmanap + adp + h
AMAOTr	[c]8aonn + amet <==> amob + dann
AMMQT8_2	[c]2dmmq8 + amet --> ahcys + h + mqn8
AMPMS	[c]air + h2o --> 4ampm + (2) for + (4) h
AMPN	[c]amp + h2o --> ade + r5p
ANPRT	[c]anth + prpp --> ppi + pran
ANS	[c]chor + gln-L --> anth + glu-L + h + pyr
AOXSr	[c]ala-L + h + pmcoa <==> 8aonn + co2 + coa
AP4AH	[c]ap4a + h2o --> (2) adp + (2) h
AP5AH	[c]ap5a + h2o --> adp + atp + (2) h
APRAUR	[c]5apru + h + nadph --> 5aprbu + nadp
ARAI	[c]arab-L <==> rbl-L
ARBabc	arab-L[e] + atp[c] + h2o[c] --> adp[c] + arab-L[c] + h[c] + pi[c]
ARbt2r	arab-L[e] + h[e] <==> arab-L[c] + h[c]
ARGabc	arg-L[e] + atp[c] + h2o[c] --> adp[c] + arg-L[c] + h[c] + pi[c]
ARGDC	[c]arg-L + h --> agm + co2
ARGORnt7	arg-L[e] + orn[c] <==> arg-L[c] + orn[e]
ARGSL	[c]argsuc <==> arg-L + fum
ARGSS	[c]asp-L + atp + citr-L --> amp + argsuc + h + ppi
ASAD	[c]aspsa + nadp + pi <==> 4pasp + h + nadph
ASNabc	asn-L[e] + atp[c] + h2o[c] --> adp[c] + asn-L[c] + h[c] + pi[c]
ASNN	[c]asn-L + h2o --> asp-L + nh4
ASNS1	[c]asp-L + atp + gln-L + h2o --> amp + asn-L + glu-L + h + ppi
ASNS2	[c]asp-L + atp + nh4 --> amp + asn-L + h + ppi
ASnt2r	asn-L[e] + h[e] <==> asn-L[c] + h[c]
ASP1DC	[c]asp-L + h --> ala-B + co2
ASPabc	asp-L[e] + atp[c] + h2o[c] --> adp[c] + asp-L[c] + h[c] + pi[c]
ASPCT	[c]asp-L + cbp --> cbasp + h + pi
ASPK	[c]asp-L + atp <==> 4pasp + adp
ASPO3	[c]asp-L + q8 --> iasp + q8h2
ASPO4	[c]asp-L + mqn8 --> iasp + mql8
ASPO5	[c]asp-L + fum --> iasp + succ
ASPO6	[c]asp-L + o2 --> h2o2 + iasp
ASPT	[c]asp-L --> fum + nh4
ASPt2	asp-L[e] + h[e] --> asp-L[c] + h[c]
ASPt2_2	asp-L[e] + (2) h[e] --> asp-L[c] + (2) h[c]
ASPt2_3	asp-L[e] + (3) h[e] --> asp-L[c] + (3) h[c]
ASPTA	[c]akg + asp-L <==> glu-L + oaa
AST	[c]arg-L + succoa --> coa + h + sucarg
ATPM	[c]atp + h2o --> adp + h + pi

Nitrogen	0	0	0	0	0	0
Nitrogen	0	0	0	0	0	0
Putative Transporters	0	0	0	0	0	0
Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011
Alternate Carbon Metabolism	0	0	0	0	0.057	0
Alternate Carbon Metabolism	0.0309	0	0	10	0.057	0.057
Alternate Carbon Metabolism	0.0236	0	0	10	0.057	0.057
Alternate Carbon Metabolism	0.0207	0	0	10	0.057	0.057
Putative	0.0275	0	0	0	0.023	0.023
Putative	0.0145	0	0	0	0.011	0.011
Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
Nucleotide Salvage Pathways	0	0	0	0	1	0
Tyrosine, Tryptophan, and Phenylalanine Metabolism	0.9912	1	1	0	1	0.989
Tyrosine, Tryptophan, and Phenylalanine Metabolism	0.9912	1	1	0	1	0.989
Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
Nucleotide Salvage Pathways	0	0	0	0	0	0
Nucleotide Salvage Pathways	0	0	0	0	0	0
Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
Alternate Carbon Metabolism	0.0162	0	0	0	0.011	0.011
Transport, Extracellular	0	0	0	0	1	0
Transport, Extracellular	0.0162	0	0	0	1	0.011
Transport, Extracellular	0	0	0	0	1	0
Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
Putative Transporters	0.0088	0	0	0	1	0.011
Arginine and Proline Metabolism	0.9912	1	1	0	1	0.989
Arginine and Proline Metabolism	0.9912	1	1	0	1	0.989
Threonine and Lysine Metabolism	1	1	1	0	1	1
Transport, Extracellular	0	0	0	0	1	0
Alanine and aspartate metabolism	0.0088	0	0	0	1	0.011
Alanine and aspartate metabolism	0.0002	0	0	1	1	0.011
Alanine and aspartate metabolism	0.9910	1	1	1	1	0.989
Transport, Extracellular	0.0088	0	0	0	1	0.011
Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
Transport, Extracellular	0	0	0	0	0.011	0
Purine and Pyrimidine Biosynthesis	0.9485	1	1	0	1	0.955
Threonine and Lysine Metabolism	1	1	1	0	1	1
Cofactor and Prosthetic Group Biosynthesis	0.3178	0.812	0	88	1	1
Cofactor and Prosthetic Group Biosynthesis	0.2186	0.132	0.525	136	1	1
Cofactor and Prosthetic Group Biosynthesis	0.4636	0.056	0.475	136	1	1
Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
Alanine and aspartate metabolism	0.0497	0	0	28	1	0.295
Transport, Extracellular	0.0088	0	0	0	0.011	0.011
Transport, Extracellular	0	0	0	0	0.011	0
Transport, Extracellular	0	0	0	0	0.011	0
Alanine and aspartate metabolism	0.9985	1	1	28	1	1
Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
Unassigned	1	1	1	0	1	1

ATPPRT	[c]atp + prpp --> ppi + prbatp	Histidine Metabolism	1	1	1	0	1	1
ATPS4r	adp[c] + (4) h[e] + pi[c] <==> atp[c] + (3) h[c] + h2o[c]	Oxidative phosphorylation	1	1	1	0	1	1
BETALDHx	[c]betald + h2o + nad --> glyb + (2) h + nadh	Unassigned	0	0	0	0	0	0
BETALDHy	[c]betald + h2o + nadp --> glyb + (2) h + nadph	Unassigned	0	0	0	0	0	0
BPNT	[c]h2o + pap --> amp + pi	Cysteine Metabolism	1	1	1	0	1	1
BSORx	[c]btnso + h + nadh --> btn + h2o + nad	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
BSORY	[c]btnso + h + nadph --> btn + h2o + nadp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
BTS2	[c]cys-L + dtbt <==> ala-L + btn + (2) h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
BUTCT	[c]accoa + but --> ac + btcoa	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
BUTt2r	but[e] + h[e] <==> but[c] + h[c]	Putative Transporters	0.0088	0	0	0	0.011	0.011
C120SN	[c]actACP + (14) h + (4) malACP + (10) nadph --> (4) ACP + (4) co2 + ddcaACP + (5) h2o + (10) nadp	Membrane Lipid Metabolism	1	1	1	0	1	1
C140SN	[c]actACP + (17) h + (5) malACP + (12) nadph --> (5) ACP + (5) co2 + (6) h2o + myrsACP + (12) nadp	Membrane Lipid Metabolism	0.9912	1	1	0	1	0.989
C141SN	[c]actACP + (16) h + (5) malACP + (11) nadph --> (5) ACP + (5) co2 + (6) h2o + (11) nadp + tdeACP	Membrane Lipid Metabolism	1	1	1	0	1	1
C160SN	[c]actACP + (20) h + (6) malACP + (14) nadph --> (6) ACP + (6) co2 + (7) h2o + (14) nadp + palmACP	Membrane Lipid Metabolism	0.9912	1	1	0	1	0.989
C161SN	[c]actACP + (19) h + (6) malACP + (13) nadph --> (6) ACP + (6) co2 + (7) h2o + hdeACP + (13) nadp	Membrane Lipid Metabolism	1	1	1	0	1	1
C181SN	[c]actACP + (22) h + (7) malACP + (15) nadph --> (7) ACP + (7) co2 + (8) h2o + (15) nadp + octeACP	Membrane Lipid Metabolism	1	1	1	0	1	1
CADVt	15dap[c] + h[e] + lys-L[e] --> 15dap[e] + h[c] + lys-L[c]	Transport, Extracellular	0	0	0	0	1	0
CAT	[c](2) h2o2 --> (2) h2o + o2	Unassigned	0	0	0	0	1	0
CBIAT	[c]atp + cbi + h2o <==> adocbi + pi + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
CBL1abc	atp[c] + cbl1[e] + h2o[c] --> adp[c] + cbl1[c] + h[c] + pi[c]	Transport, Extracellular	0	0	0	0	0	0
CBLAT	[c]atp + cbl1 + h2o <==> adocbl + pi + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
CBMK	[c]atp + co2 + nh4 --> adp + cbp + (2) h	Putative	1	1	1	0	1	1
CBPS	[c](2) atp + gln-L + h2o + hco3 --> (2) adp + cbp + glu-L + (2) h + pi	Arginine and Proline Metabolism	0	0	0	0	1	0
CDAPPA_EC	[c](0.02) cdpdag1 + h2o --> cmp + (2) h + (0.02) pa_EC	Membrane Lipid Metabolism	0	0	0	0	1	0
CDPMEK	[c]4c2me + atp --> 2p4c2me + adp + h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
CHLabc	atp[c] + chol[e] + h2o[c] --> adp[c] + chol[c] + h[c] + pi[c]	Putative Transporters	0	0	0	0	1	0
CHLT2r	chol[e] + h[e] <==> chol[c] + h[c]	Transport, Extracellular	0	0	0	0	1	0
CHORM	[c]chor --> pphn	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
CHORS	[c]3psme --> chor + pi	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
CHRPL	[c]chor --> 4hbz + pyr	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
CINNDO	[c]cinnm + h + nadh + o2 --> cenchddd + nad	Alternate Carbon Metabolism	0	0	0	0	0	0
CITL	[c]cit --> ac + oaa	Citrate Cycle (TCA)	0.0264	0	0	0	1	0.034
CITt7	cit[e] + succ[c] --> cit[c] + succ[e]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
CLPNS_EC	[c](0.04) pg_EC <==> (0.02) clpn_EC + glyc	Membrane Lipid Metabolism	1	1	1	0	1	1
CMPN	[c]cmp + h2o --> csn + r5p	Nucleotide Salvage Pathways	0	0	0	0	1	0
CO2t	co2[e] <==> co2[c]	Transport, Extracellular	1	1	1	0	1	1
CPPPGO	[c]cpppg3 + (2) h + o2 --> (2) co2 + (2) h2o + pppg9	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
CRNBCT	[c]bbtcoa + crn <==> crncoa + gbbtn	Oxidative phosphorylation	0	0	0	0	0	0
CRNCBCT	[c]crn + ctbtcoa <==> crncoa + ctbt	Oxidative phosphorylation	0	0	0	0	0	0
CRNCDH	[c]crncoa <==> ctbtcoa + h2o	Oxidative phosphorylation	0	0	0	0	0	0
CRNt7	crn[e] + gbbtn[c] --> crn[c] + gbbtn[e]	Transport, Extracellular	0	0	0	0	0	0
CS	[c]accoa + h2o + oaa --> cit + coa + h	Citrate Cycle (TCA)	0.9736	1	1	0	1	0.966
CSND	[c]csn + h + h2o --> nh4 + ura	Nucleotide Salvage Pathways	0	0	0	0	1	0

CSNt2	csn[e] + h[e] --> csn[c] + h[c]	Transport, Extracellular	0	0	0	0	0	0
CTPS2	[c]atp + gln-L + h2o + utp --> adp + ctp + glu-L + (2) h + pi	Purine and Pyrimidine Biosynthesis	0.9824	1	1	0	1	0.989
CYANST	[c]cyan + tsul --> h + so3 + tcynt	Unassigned	0	0	0	0	0	0
CYNTAH	[c]cynt + (3) h + hco3 --> (2) co2 + nh4	Nitrogen	0	0	0	0	0	0
CYNTt2	cynt[e] + h[e] --> cynt[c] + h[c]	Putative Transporters	0	0	0	0	0	0
CYSabc	atp[c] + cys-L[e] + h2o[c] --> adp[c] + cys-L[c] + h[c] + pi[c]	Transport, Extracellular	0	0	0	0	0	0
CYSS	[c]acser + h2s --> ac + cys-L + h	Cysteine Metabolism	1	1	1	0	1	1
CYSTL	[c]cyst-L + h2o --> hcys-L + nh4 + pyr	Methionine Metabolism	1	1	1	0	1	1
CYTBd	(2) h[c] + (0.5) o2[c] + q8h2[c] --> (2) h[e] + h2o[c] + q8[c]	Oxidative phosphorylation	0	0	0	0	1	0
CYTBO3	(2.5) h[c] + (0.5) o2[c] + q8h2[c] --> (2.5) h[e] + h2o[c] + q8[c]	Oxidative phosphorylation	0.7695	1	0	0	1	1
CYTD	[c]cytd + h + h2o --> nh4 + uri	Nucleotide Salvage Pathways	0.0176	0	0	2	1	0.011
CYTDK2	[c]cytd + gtp --> cmp + gdp + h	Nucleotide Salvage Pathways	0.0176	0	0	2	1	0.011
CYTDt2	cytd[e] + h[e] --> cytd[c] + h[c]	Transport, Extracellular	0	0	0	0	0	0
CYTDt2r	cytd[e] + h[e] <==> cytd[c] + h[c]	Transport, Extracellular	0.0176	0	0	0	1	0.011
CYTK1	[c]atp + cmp <==> adp + cdp	Nucleotide Salvage Pathways	1	1	1	2	1	1
CYTK2	[c]atp + dcmp <==> adp + dcdp	Nucleotide Salvage Pathways	0.0019	0	0	2	1	0.011
DAAD	[c]ala-D + fad + h2o --> fadh2 + nh4 + pyr	Alanine and aspartate metabolism	0	0	0	0	1	0
DADA	[c]dad-2 + h + h2o --> din + nh4	Nucleotide Salvage Pathways	0.0156	0	0	4	1	0.023
DADK	[c]atp + damp <==> adp + dadp	Nucleotide Salvage Pathways	0.1660	0.328	0.029	90	1	0.602
DADNt2	dad-2[e] + h[e] --> dad-2[c] + h[c]	Transport, Extracellular	0.0168	0	0	0	0.011	0.011
DAGK_EC	[c](0.02) 12dgr_EC + atp --> adp + h + (0.02) pa_EC	Cell Envelope Biosynthesis	1	1	1	0	1	1
DALAt2r	ala-D[e] + h[e] <==> ala-D[c] + h[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
DAPabc	26dap-M[e] + atp[c] + h2o[c] --> 26dap-M[c] + adp[c] + h[c] + pi[c]	Transport, Extracellular	0	0	0	0	0	0
DAPDC	[c]26dap-M + h --> co2 + lys-L	Threonine and Lysine Metabolism	1	1	1	0	1	1
DAPE	[c]26dap-LL <==> 26dap-M	Threonine and Lysine Metabolism	1	1	1	0	1	1
DASYN_EC	[c]ctp + h + (0.02) pa_EC <==> (0.02) cdpdag1 + ppi	Membrane Lipid Metabolism	1	1	1	0	1	1
DB4PS	[c]ru5p-D --> db4p + for + h	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DBTSr	[c]atp + co2 + dann <==> adp + dtbt + (3) h + pi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DCTPD	[c]dctp + h + h2o --> dutp + nh4	Nucleotide Salvage Pathways	0.0052	0	0	2	1	0.011
DCYTD	[c]dcyt + h + h2o --> duri + nh4	Nucleotide Salvage Pathways	0.0118	0	0	2	1	0.023
DCYTt2	dcyt[e] + h[e] --> dcyt[c] + h[c]	Transport, Extracellular	0.0099	0	0	0	0.011	0.011
DDGALK	[c]2dh3dgal + atp --> 2dh3dgal6p + adp + h	Alternate Carbon Metabolism	0.0132	0	0	0	0.011	0.011
DDGLCNt2r	2ddglcn[e] + h[e] <==> 2ddglcn[c] + h[c]	Transport, Extracellular	0.0132	0	0	0	0.034	0.011
DDGLK	[c]2ddglcn + atp --> 2ddg6p + adp + h	Alternate Carbon Metabolism	0.0399	0	0	0	0.034	0.034
DDPA	[c]e4p + h2o + pep --> 2dda7p + pi	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
DDPGALA	[c]2dh3dgal6p <==> g3p + pyr	Alternate Carbon Metabolism	0.0132	0	0	0	0.011	0.011
DGK1	[c]atp + dgmp <==> adp + dgdp	Nucleotide Salvage Pathways	0.2709	0.192	0.926	90	1	0.602
DGSNt2	dgsn[e] + h[e] --> dgsn[c] + h[c]	Transport, Extracellular	0.0099	0	0	0	0.011	0.011
DHAD1	[c]23dhmb --> 3mob + h2o	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
DHAD2	[c]23dhmp --> 3mop + h2o	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
DHAPT	[c]dha + pep --> dhap + pyr	Alternate Carbon Metabolism	0.2386	0.712	0.510	64	1	0.352
DHAt	dha[e] <==> dha[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
DHBD	[c]23ddhb + nad <==> 23dhb + h + nadh	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DHBSr	[c]23dhb + atp <==> 23dhba + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DHCIND	[c]cenchddd + nad --> dhcinm + h + nadh	Alternate Carbon Metabolism	0	0	0	0	0	0
DHCINDO	[c]dhcinm + o2 --> hkntd	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
DHDPrY	[c]23dhdp + h + nadph --> nadp + thdp	Threonine and Lysine Metabolism	1	1	1	0	1	1
DHDPS	[c]aspsa + pyr --> 23dhdp + h + (2) h2o	Threonine and Lysine Metabolism	1	1	1	0	1	1
DHFR	[c]dhf + h + nadph <==> nadp + thf	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1

DHFS	[c]atp + dhpt + glu-L --> adp + dhf + pi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DHNAOT	[c]dhna + octdp --> 2dmmq8 + co2 + h + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DHNPAA2	[c]dhnpt --> 6hnhpt + gcald	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DHORD2	[c]dhor-S + q8 --> orot + q8h2	Purine and Pyrimidine Biosynthesis	0.5316	0.808	0	84	1	0.955
DHORD5	[c]dhor-S + mqn8 --> mql8 + orot	Purine and Pyrimidine Biosynthesis	0.4169	0.192	1	84	1	0.955
DHORTS	[c]dhor-S + h2o <==> cbasp + h	Purine and Pyrimidine Biosynthesis	0.9485	1	1	0	1	0.955
DHPPD	[c]cechddd + nad --> dhpppn + h + nadh	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
DHPPDA2	[c]25drapp + h + h2o --> 5apru + nh4	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DHPS2	[c]4abz + 6hnhptpp --> dhpt + h + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DHPTDC	[c]dhptd --> h2o + hmfurn	Methionine Metabolism	0	0	0	0	0	0
DHQD	[c]3dhq <==> 3dhsk + h2o	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
DHQS	[c]2dda7p --> 3dhq + pi	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
DINSt2	din[e] + h[e] --> din[c] + h[c]	Transport, Extracellular	0.0099	0	0	0	0.011	0.011
DKGLCNR1	[c]25dkglcn + h + nadph --> 2dhgulin + nadp	Alternate Carbon Metabolism	0	0	0	0	0	0
DKGLCNR2x	[c]25dkglcn + h + nadh --> 5dglcn + nad	Alternate Carbon Metabolism	0	0	0	0	0	0
DKGLCNR2y	[c]25dkglcn + h + nadph --> 5dglcn + nadp	Alternate Carbon Metabolism	0	0	0	0	0	0
DKMPPD	[c]dkmpp + h2o + o2 --> 2kmb + for + (2) h + pi	Arginine and Proline Metabolism	0.7695	1	0	0	1	1
DKMPPD2	[c]dkmpp + (3) h2o --> 2kmb + for + (6) h + pi	Arginine and Proline Metabolism	0.2305	0	1	0	1	0
D-LACT2	h[e] + lac-D[e] <==> h[c] + lac-D[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
DMATT	[c]dmpp + ipdp --> grdp + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DMPPS	[c]h + h2mb4p + nadh --> dmpp + h2o + nad	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DMQMT	[c]2omhmb1 + amet --> ahcys + h + q8h2	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DMSOR1	[c]dmso + mql8 --> dms + h2o + mqn8	Oxidative phosphorylation	0	0	0	0	0	0
DMSOR1e	dmso[e] + mql8[c] --> dms[e] + h2o[e] + mqn8[c]	Oxidative phosphorylation	0	0	0	0	0	0
DMSOR2	[c]2dmmql8 + dmso --> 2dmmq8 + dms + h2o	Oxidative phosphorylation	0	0	0	0	0	0
DMSOR2e	2dmmql8[c] + dmso[e] --> 2dmmq8[c] + dms[e] + h2o[e]	Oxidative phosphorylation	0	0	0	0	0	0
DNMPPA	[c]dhmp + h2o --> dhnp + pi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DNTPPA	[c]ahdt + h2o --> dhpp + h + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DOGULNR	[c]23dogulin + h + nadh --> 3dhgulin + nad	Alternate Carbon Metabolism	0	0	0	0	0	0
DPCOAK	[c]atp + dpcoa --> adp + coa + h	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DPR	[c]2dhp + h + nadph --> nadp + pant-R	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
DRPA	[c]2dr5p --> acald + g3p	Alternate Carbon Metabolism	0.7134	1	1	0	1	0.659
DSERt2r	h[e] + ser-D[e] <==> h[c] + ser-D[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
DTMPK	[c]atp + dtmp <==> adp + dtdp	Nucleotide Salvage Pathways	1	1	1	0	1	1
DURIK1	[c]atp + duri --> adp + dump + h	Nucleotide Salvage Pathways	0.0565	0	0	0	1	0.057
DURIPP	[c]duri + pi <==> 2dr1p + ura	Nucleotide Salvage Pathways	0.2764	0.48	0.044	90	1	0.659
DURIt2	duri[e] + h[e] --> duri[c] + h[c]	Transport, Extracellular	0.0099	0	0	0	0.011	0.011
DUTPDP	[c]dutp + h2o --> dump + h + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
DXPRli	[c]dxyl5p + h + nadph --> 2me4p + nadp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DXPS	[c]g3p + h + pyr --> co2 + dxyl5p	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
DXYLK	[c]atp + dxyl --> adp + dxyl5p + h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
E4PD	[c]e4p + h2o + nad <==> 4per + (2) h + nadh	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ECAP_EC	[c]unagamuf --> eca_EC + h + udcdp	Cell Envelope Biosynthesis	0	0	0	0	0	0
EDA	[c]2ddg6p --> g3p + pyr	Pentose Phosphate Cycle	0.0471	0	0	0	1	0.034
EDD	[c]6pgc --> 2ddg6p + h2o	Pentose Phosphate Cycle	0.0072	0	0	0	1	0
EDTXS1	[c]ddcaACP + kdo2lipid4 --> ACP + kdo2lipid4L	Cell Envelope Biosynthesis	1	1	1	0	1	1
EDTXS2	[c]kdo2lipid4L + myrsACP --> ACP + lipa	Cell Envelope Biosynthesis	1	1	1	0	1	1
EDTXS3	[c]hdeACP + kdo2lipid4 --> ACP + kdo2lipid4p	Cell Envelope Biosynthesis	0	0	0	0	0	0
EDTXS4	[c]kdo2lipid4p + myrsACP --> ACP + lipa_cold	Cell Envelope Biosynthesis	0	0	0	0	0	0

ENO	[c]2pg <==> h2o + pep	Glycolysis/Gluconeogenesis	1	1	1	3	1	1
ENTCS	[c](3) 23dhba + (3) seramp --> (6) amp + enter + (6) h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ETHAAL	[c]etha --> acald + nh4	Cell Envelope Biosynthesis	0	0	0	0	1	0
ETOHT2r	etoh[e] + h[e] <==> etoh[c] + h[c]	Transport, Extracellular	0.2143	0	1	0	1	0.011
F6PA	[c]f6p <==> dha + g3p	Glycolysis/Gluconeogenesis	0.7806	0.712	0.510	64	1	0.955
FAO1	[c]atp + (7) coa + (6) fad + (6) h2o + (6) nad + ttdca --> (7) accoa + amp + (6) fadh2 + (6) h + (6) nadh + ppi	Membrane Lipid Metabolism	0.0088	0	0	0	1	0.011
FAO2	[c]atp + (8) coa + (7) fad + (7) h2o + hdca + (7) nad --> (8) accoa + amp + (7) fadh2 + (7) h + (7) nadh + ppi	Membrane Lipid Metabolism	0.0088	0	0	0	1	0.011
FAO3	[c]atp + (9) coa + (8) fad + (8) h2o + (8) nad + ocdca --> (9) accoa + amp + (8) fadh2 + (8) h + (8) nadh + ppi	Membrane Lipid Metabolism	0.0088	0	0	0	0.011	0.011
FAO4	[c]btcoa + fad + h2o + nad --> aacoa + fadh2 + h + nadh	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
FBA	[c]fdp <==> dhap + g3p	Glycolysis/Gluconeogenesis	0.7972	1	1	64	1	1
FBP	[c]fdp + h2o --> f6p + pi	Glycolysis/Gluconeogenesis	0.5188	0	0	0	1	0.602
FCI	[c]fuc-L <==> fcl-L	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
FCLK	[c]atp + fcl-L --> adp + fc1p + h	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
FCLPA	[c]fc1p <==> dhap + lald-L	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
FCLT	[c]fe2 + ppp9 --> (2) h + pheme	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
FDH2	for[c] + (3) h[c] + q8[c] --> co2[c] + (2) h[e] + q8h2[c]	Oxidative phosphorylation	0.1794	0.072	0	68	1	0.773
FDH3	for[c] + (3) h[c] + mqn8[c] --> co2[c] + (2) h[e] + mql8[c]	Oxidative phosphorylation	0.1237	0.046	0	68	1	0.773
FE2abc	atp[c] + fe2[e] + h2o[c] --> adp[c] + fe2[c] + h[c] + pi[c]	Transport, Extracellular	0	0	0	0	0	0
FFSD	[c]h2o + suc6p --> fru + g6p	Alternate Carbon Metabolism	0.0166	0	0	0	0.011	0.011
FHL	[c]for + h --> co2 + h2	Pyruvate metabolism	0.2902	0.882	0	68	1	0.773
FMNAT	[c]atp + fmn + h --> fad + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
FORt	for[e] <==> for[c]	Transport, Extracellular	0.2305	0	1	0	1	0
FRD2	[c]fum + mql8 --> mqn8 + succ	Citrate Cycle (TCA)	0.6653	0.568	1	136	1	1
FRD3	[c]2dmmql8 + fum --> 2dmmql8 + succ	Citrate Cycle (TCA)	0.2492	0.238	0	88	1	1
FRUK	[c]atp + f1p --> adp + fdp + h	Alternate Carbon Metabolism	0.0101	0	0	2	0.011	0.011
FRUpts	fru[e] + pep[c] --> f1p[c] + pyr[c]	Transport, Extracellular	0.0101	0	0	2	0.011	0.011
FRUpts2	fru[e] + pep[c] --> f6p[c] + pyr[c]	Transport, Extracellular	0.0165	0	0	2	0.011	0.011
FTHFD	[c]10fthf + h2o --> for + h + thf	Folate Metabolism	0.4099	1	0	0	1	0.500
FUCPt6_2	fuc1p-L[e] + (2) pi[c] --> fuc1p-L[c] + (2) pi[e]	Transport, Extracellular	0	0	0	0	0	0
FUCt	fuc-L[e] + h[e] <==> fuc-L[c] + h[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
FUM	[c]fum + h2o <==> mal-L	Citrate Cycle (TCA)	1	1	1	29	1	1
FUMt2_2	fum[e] + (2) h[e] --> fum[c] + (2) h[c]	Transport, Extracellular	0.0139	0	0	4	1	0.045
FUMt2_3	fum[e] + (3) h[e] --> fum[c] + (3) h[c]	Transport, Extracellular	0	0	0	0	1	0
G1PACT	[c]accoa + gam1p --> acgam1p + coa + h	Cell Envelope Biosynthesis	1	1	1	0	1	1
G1PP	[c]g1p + h2o --> glc-D + pi	Glycolysis/Gluconeogenesis	0	0	0	0	1	0
G1PTT	[c]dttp + g1p + h --> dtdpglu + ppi	Cell Envelope Biosynthesis	0	0	0	0	0	0
G1SATi	[c]glu1sa --> 5aop	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
G3PD2	[c]glyc3p + nadp <==> dhap + h + nadph	Alternate Carbon Metabolism	1	1	1	4	1	1
G3PD5	[c]glyc3p + q8 --> dhap + q8h2	Oxidative phosphorylation	0	0	0	0	1	0
G3PD6	[c]glyc3p + mqn8 --> dhap + mql8	Oxidative phosphorylation	0	0	0	0	1	0
G3PD7	[c]2dmmql8 + glyc3p --> 2dmmql8 + dhap	Oxidative phosphorylation	0	0	0	0	1	0
G5SADs	[c]glu5sa --> 1pyr5c + h + h2o	Arginine and Proline Metabolism	0.9912	1	1	0	1	0.989
G5SD	[c]glu5p + h + nadph --> glu5sa + nadp + pi	Arginine and Proline Metabolism	0.9824	1	1	0	1	0.977
G6PDA	[c]gam6p + h2o --> f6p + nh4	Alternate Carbon Metabolism	0.0553	0	0	1	1	0.057
G6PDH2r	[c]g6p + nadp <==> 6pgl + h + nadph	Pentose Phosphate Cycle	0.3876	1	0	0	1	0.500
G6Pt6_2	g6p[e] + (2) pi[c] --> g6p[c] + (2) pi[e]	Transport, Extracellular	0.0149	0	0	0	0.011	0.011

GALabc	atp[c] + gal[e] + h2o[c] --> adp[c] + gal[c] + h[c] + pi[c]	Transport, Extracellular	0	0	0	0	0.011	0
GALCTD	[c]galct-D --> 5dh4dglc + h2o	Alternate Carbon Metabolism	0.0169	0	0	0	0.011	0.011
GALCTND	[c]galctn-D --> 2dh3dgal + h2o	Alternate Carbon Metabolism	0.0132	0	0	0	0.011	0.011
GALCTNt2r	galctn-D[e] + h[e] <==> galctn-D[c] + h[c]	Transport, Extracellular	0.0132	0	0	0	0.011	0.011
GALCTt2r	galct-D[e] + h[e] <==> galct-D[c] + h[c]	Putative Transporters	0.0169	0	0	0	0.011	0.011
GALKr	[c]atp + gal <==> adp + gal1p + h	Alternate Carbon Metabolism	0.0438	0	0	0	0.034	0.034
GALS3	[c]h2o + melib --> gal + glc-D	Alternate Carbon Metabolism	0.0149	0	0	0	0.011	0.011
GALT2	gal[e] + h[e] --> gal[c] + h[c]	Transport, Extracellular	0.0147	0	0	0	0.011	0.011
GALTpts	galt[e] + pep[c] --> galt1p[c] + pyr[c]	Transport, Extracellular	0.0133	0	0	0	0.011	0.011
GALU	[c]g1p + h + utp <==> ppi + udpg	Alternate Carbon Metabolism	1	1	1	0	1	1
GALUi	[c]g1p + h + utp --> ppi + udpg	Cell Envelope Biosynthesis	0	0	0	0	0	0
GALURt2r	galur[e] + h[e] <==> galur[c] + h[c]	Transport, Extracellular	0.0133	0	0	0	0.011	0.011
GAMpts	gam[e] + pep[c] --> gam6p[c] + pyr[c]	Transport, Extracellular	0.0119	0	0	0	0.011	0.011
GAPD	[c]g3p + nad + pi <==> 13dpg + h + nadh	Glycolysis/Gluconeogenesis	1	1	1	0	1	1
GARFT	[c]10thf + gar <==> fgam + h + thf	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
GART	[c]atp + for + gar --> adp + fgam + h + pi	Purine and Pyrimidine Biosynthesis	0.1830	0	0	0	1	0.227
GCALDD	[c]gcald + h2o + nad --> glyclt + (2) h + nadh	Folate Metabolism	1	1	1	0	1	1
GDMANE	[c]gdpddman --> gdpofuc	Cell Envelope Biosynthesis	0	0	0	0	0	0
GF6PTA	[c]f6p + gln-L --> gam6p + glu-L	Cell Envelope Biosynthesis	0.9481	1	1	1	1	0.955
GHMT2	[c]ser-L + thf --> gly + h2o + mlthf	Glycine and Serine Metabolism	0.9814	1	1	0	1	0.977
GK1	[c]atp + gmp <==> adp + gdp	Nucleotide Salvage Pathways	1	1	1	90	1	1
GLCDe	glc-D[e] + h2o[e] + q8[c] --> glcn[e] + h[e] + q8h2[c]	Oxidative phosphorylation	0	0	0	0	0.023	0
GLCNt2r	glcn[e] + h[e] <==> glcn[c] + h[c]	Transport, Extracellular	0.0161	0	0	0	0.045	0.011
GLCP	[c]glycogen + pi --> g1p	Glycolysis/Gluconeogenesis	0	0	0	0	1	0
GLCpts	glc-D[e] + pep[c] --> g6p[c] + pyr[c]	Transport, Extracellular	0.0208	1	1	2	0.023	0.023
GLCRAL	[c]5dh4dglc --> 2h3oppa + pyr	Alternate Carbon Metabolism	0.0337	0	0	0	0.023	0.023
GLCRD	[c]glcr --> 5dh4dglc + h2o	Alternate Carbon Metabolism	0.0168	0	0	0	0.011	0.011
GLCRT2r	glcr[e] + h[e] <==> glcr[c] + h[c]	Putative Transporters	0.0168	0	0	0	0.011	0.011
GLCS1	[c]adpglc --> adp + glycogen + h	Glycolysis/Gluconeogenesis	1	1	1	0	1	1
GLCt2	glc-D[e] + h[e] --> glc-D[c] + h[c]	Transport, Extracellular	0	0	0	0	0.023	0
GLCURt2r	glcur[e] + h[e] <==> glcur[c] + h[c]	Transport, Extracellular	0.0133	0	0	0	0.011	0.011
GLGC	[c]atp + g1p + h --> adpglc + ppi	Glycolysis/Gluconeogenesis	1	1	1	0	1	1
GLNabc	atp[c] + gln-L[e] + h2o[c] --> adp[c] + gln-L[c] + h[c] + pi[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
GLNS	[c]atp + glu-L + nh4 --> adp + gln-L + h + pi	Glutamate metabolism	0.9912	1	1	0	1	0.989
GLTPD	[c]galt1p + nad <==> h + nadh + tag6p-D	Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011
GLU5K	[c]atp + glu-L --> adp + glu5p	Arginine and Proline Metabolism	0.9824	1	1	0	1	0.977
GLUabc	atp[c] + glu-L[e] + h2o[c] --> adp[c] + glu-L[c] + h[c] + pi[c]	Transport, Extracellular	0	0	0	0	1	0
GLUABUTt7	4abut[c] + glu-L[e] <==> 4abut[e] + glu-L[c]	Putative Transporters	0.0088	0	0	0	1	0.011
GLUCYS	[c]atp + cys-L + glu-L --> adp + glucys + h + pi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
GLUDC	[c]glu-L + h --> 4abut + co2	Glutamate metabolism	0	0	0	0	1	0
GLUDy	[c]glu-L + h2o + nadp <==> akg + h + nadph + nh4	Glutamate metabolism	0.9870	1	1	28	1	1
GLUN	[c]gln-L + h2o --> glu-L + nh4	Glutamate metabolism	0.0007	0	0	1	1	0.011
GLUPRT	[c]gln-L + h2o + prpp --> glu-L + ppi + pram	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
GLUR	[c]glu-D <==> glu-L	Cell Envelope Biosynthesis	1	1	1	0	1	1
GLUSy	[c]akg + gln-L + h + nadph --> (2) glu-L + nadp	Glutamate metabolism	0.0049	0	0	1	1	0.011
GLUt2r	glu-L[e] + h[e] <==> glu-L[c] + h[c]	Transport, Extracellular	0.0176	0	0	0	1	0.023
GLUt4	glu-L[e] + na1[e] --> glu-L[c] + na1[c]	Transport, Extracellular	0	0	0	0	0	0
GLUTRR	[c]glutrna + h + nadph --> glu1sa + nadp + trnaglu	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
GLUTRS	[c]atp + glu-L + trnaglu --> amp + glutrna + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0

GLXCL	[c](2) glx + h --> 2h3oppan + co2	Glyoxylate Metabolism	0.1704	0	0	0	1	0.227
GLYALDt	glyald[e] <==> glyald[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
GLYATi	[c]2aobut + coa --> accoa + gly	Glycine and Serine Metabolism	0.0571	0	0	18	1	0.136
GLYBabc	atp[c] + glyb[e] + h2o[c] --> adp[c] + glyb[c] + h[c] + pi[c]	Putative Transporters	0	0	0	0	1	0
GLYBt2r	glyb[e] + h[e] <==> glyb[c] + h[c]	Putative Transporters	0	0	0	0	1	0
GLYC3Pabc	atp[c] + glyc3p[e] + h2o[c] --> adp[c] + glyc3p[c] + h[c] + pi[c]	Transport, Extracellular	0	0	0	0	0.011	0
GLYC3Pt6	glyc3p[e] + pi[c] --> glyc3p[c] + pi[e]	Transport, Extracellular	0.0156	0	0	0	0.011	0.011
GLYCDx	[c]glyc + nad --> dha + h + nadh	Alternate Carbon Metabolism	0.5406	0	0	4	1	0.636
GLYCK	[c]atp + glyc-R --> 3pg + adp + h	Glyoxylate Metabolism	0.2041	0	0	0	1	0.250
GLYCL	[c]gly + nad + thf --> co2 + mlthf + nadh + nh4	Folate Metabolism	0.1792	0	0	0	1	0.239
GLYCLTDx	[c]glx + h + nadh --> glyclt + nad	Glyoxylate Metabolism	0	0	0	0	1	0
GLYCLTDy	[c]glx + h + nadph --> glyclt + nadp	Glyoxylate Metabolism	0	0	0	0	1	0
GLYCLTt2r	glyclt[e] + h[e] <==> glyclt[c] + h[c]	Transport, Extracellular	0.2394	0	1	0	1	0.011
GLYct	glyc[c] <==> glyclt[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
GLYCTO2	[c]glyclt + q8 --> glx + q8h2	Alternate Carbon Metabolism	0.4058	0.778	0	88	1	1
GLYCTO3	[c]glyclt + mqn8 --> glx + mql8	Alternate Carbon Metabolism	0.1669	0.102	0	88	1	1
GLYCTO4	[c]2dmmq8 + glyclt --> 2dmmql8 + glx	Alternate Carbon Metabolism	0.1968	0.12	0	88	1	1
GLYK	[c]atp + glyc --> adp + glyc3p + h	Alternate Carbon Metabolism	0.4770	1	1	4	1	0.398
GLYOX	[c]h2o + lgt-S --> gthrd + h + lac-D	Methylglyoxal Metabolism	0	0	0	0	1	0
GLYt2r	gly[e] + h[e] <==> gly[c] + h[c]	Transport, Extracellular	0.0098	0	0	0	1	0.011
GMAND	[c]gdpmann --> gdpddman + h2o	Cell Envelope Biosynthesis	0	0	0	0	0	0
GMHEPAT	[c]atp + gmhep1p + h --> adphep-D,D + ppi	Cell Envelope Biosynthesis	1	1	1	0	1	1
GMHEPK	[c]atp + gmhep7p --> adp + gmhep17bp + h	Cell Envelope Biosynthesis	1	1	1	0	1	1
GMHEPPA	[c]gmhep17bp + h2o --> gmhep1p + pi	Cell Envelope Biosynthesis	1	1	1	0	1	1
GMPR	[c]gmp + (2) h + nadph --> imp + nadp + nh4	Purine and Pyrimidine Biosynthesis	0.0321	0	0	0	1	0.034
GMPS2	[c]atp + gln-L + h2o + xmp --> amp + glu-L + gmp + (2) h + ppi	Purine and Pyrimidine Biosynthesis	0.9790	1	1	0	1	0.977
GND	[c]6pgc + nadp --> co2 + nadph + ru5p-D	Pentose Phosphate Cycle	0.4108	1	0	0	1	0.511
GNK	[c]atp + glcn --> 6pgc + adp + h	Alternate Carbon Metabolism	0.0320	0	0	0	0.045	0.023
GOFUCR	[c]gdpofuc + h + nadph --> gdpfuc + nadp	Cell Envelope Biosynthesis	0	0	0	0	0	0
GP4GH	[c]gp4g + h2o --> (2) gdp + (2) h	Nucleotide Salvage Pathways	0	0	0	0	0	0
GPDDA1	[c]g3pc + h2o --> chol + glyc3p + h	Cell Envelope Biosynthesis	0	0	0	0	0	0
GPDDA2	[c]g3pe + h2o --> etha + glyc3p + h	Cell Envelope Biosynthesis	0	0	0	0	1	0
GPDDA3	[c]g3ps + h2o --> glyc3p + h + ser-L	Cell Envelope Biosynthesis	0	0	0	0	0	0
GPDDA4	[c]g3pg + h2o --> glyc + glyc3p + h	Cell Envelope Biosynthesis	0	0	0	0	1	0
GPDDA5	[c]g3pi + h2o --> glyc3p + h + inost	Cell Envelope Biosynthesis	0	0	0	0	0	0
GRTT	[c]grdp + ipdp --> frdp + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
GSNK	[c]atp + gsn --> adp + gmp + h	Nucleotide Salvage Pathways	0.2905	0.192	0.926	90	1	0.614
GSnt2	gsn[e] + h[e] --> gsn[c] + h[c]	Transport, Extracellular	0.0111	0	0	0	0.011	0.011
GSPMDA	[c]gtspmd + h2o --> gthrd + spmd	Arginine and Proline Metabolism	0	0	0	0	1	0
GSPMDS	[c]atp + gthrd + spmd --> adp + gtspmd + h + pi	Arginine and Proline Metabolism	0	0	0	0	1	0
GTHOr	[c]gthox + h + nadph <==> (2) gthrd + nadp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
GTHS	[c]atp + glucys + gly --> adp + gthrd + h + pi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
GTPCI	[c]gtp + h2o --> ahdt + for	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
GTPCII2	[c]gtp + (3) h2o --> 25drapp + for + (2) h + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
GUAD	[c]gua + h + h2o --> nh4 + xan	Nucleotide Salvage Pathways	0.0210	0	0	0	1	0.023
GUAPRT	[c]gua + prpp --> gmp + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
GUAt	gua[e] <==> gua[c]	Transport, Extracellular	0	0	0	0	1	0
GUAt2	gua[e] + h[e] --> gua[c] + h[c]	Putative Transporters	0	0	0	0	1	0
GUI1	[c]glcur <==> fruor	Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011

GUI2	[c]galur <==> tagur	Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011
H2Ot	h2o[e] <==> h2o[c]	Transport, Extracellular	1	1	1	4	1	1
HBZOPT	[c]4hzbz + octdp --> 3ophb + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
HCINNMT2r	3hcinnm[e] + h[e] <==> 3hcinnm[c] + h[c]	Putative Transporters	0.0088	0	0	0	0.011	0.011
HCO3E	[c]co2 + h2o <==> h + hco3	Unassigned	1	1	1	0	1	1
HDCAT2	h[e] + hdca[e] --> h[c] + hdca[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
HEMEOS	[c]frdp + h2o + pheme --> hemeO + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
HETZK	[c]4mhetz + atp --> 4mpetz + adp + h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
HEX1	[c]atp + glc-D --> adp + g6p + h	Glycolysis/Gluconeogenesis	0.1303	0	0	2	1	0.102
HISabc	atp[c] + h2o[c] + his-L[e] --> adp[c] + h[c] + his-L[c] + pi[c]	Transport, Extracellular	0	0	0	0	1	0
HIS2r	h[e] + his-L[e] <==> h[c] + his-L[c]	Transport, Extracellular	0	0	0	0	1	0
HISTD	[c]h2o + histd + (2) nad --> (3) h + his-L + (2) nadh	Histidine Metabolism	1	1	1	0	1	1
HISTP	[c]h2o + hisp --> histd + pi	Histidine Metabolism	1	1	1	0	1	1
HKND DH	[c]h2o + hkndd --> (2) h + op4en + succ	Alternate Carbon Metabolism	0.0176	0	0	0	0.023	0.023
HKNTDH	[c]h2o + hkntd --> fum + (2) h + op4en	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
HMBS	[c]h2o + (4) ppbng --> hmbil + (4) nh4	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
HMPK1	[c]4ahmmp + atp --> 4ampm + adp + h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
HOPNTAL	[c]4h2opntn --> acald + pyr	Alternate Carbon Metabolism	0.0264	0	0	0	0.034	0.034
HPPK2	[c]6hmhpt + atp --> 6hmhptpp + amp + h	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
HPPPNDO	[c]dhpppn + o2 --> hkndd	Alternate Carbon Metabolism	0.0176	0	0	0	0.023	0.023
HPPPNt2r	3hpppn[e] + h[e] <==> 3hpppn[c] + h[c]	Putative Transporters	0.0088	0	0	0	0.011	0.011
HPYRI	[c]hpyr <==> 2h3oppan	Alternate Carbon Metabolism	0.1063	0	0	24	1	0.250
HPYRRx	[c]h + hpyr + nadh --> glyc-R + nad	Alternate Carbon Metabolism	0.0972	0	0	24	1	0.250
HPYRRy	[c]h + hpyr + nadph --> glyc-R + nadp	Alternate Carbon Metabolism	0.0106	0	0	18	1	0.205
HSDy	[c]hom-L + nadp <==> aspsa + h + nadph	Threonine and Lysine Metabolism	1	1	1	0	1	1
HSK	[c]atp + hom-L --> adp + h + phom	Threonine and Lysine Metabolism	0.6057	0	1	0	1	0.500
HSST	[c]hom-L + succoa --> coa + suchms	Methionine Metabolism	1	1	1	0	1	1
HSTPT	[c]glu-L + imacp --> akg + hisp	Histidine Metabolism	1	1	1	0	1	1
HXPRT	[c]hxan + prpp --> imp + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
HYD1	(2) h[c] + h2[c] + q8[c] --> (2) h[e] + q8h2[c]	Oxidative phosphorylation	0.1165	0.424	0	68	1	0.773
HYD2	(2) h[c] + h2[c] + mqn8[c] --> (2) h[e] + mql8[c]	Oxidative phosphorylation	0.0996	0.312	0	68	1	0.773
HYD3	2dmmq8[c] + (2) h[c] + h2[c] --> 2dmmql8[c] + (2) h[e]	Oxidative phosphorylation	0.0741	0.146	0	68	1	0.773
HYPOE	[c]h2o + pyam5p --> pi + pydam	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
HYXNt	hxan[e] <==> hxan[c]	Transport, Extracellular	0.0152	0	0	2	1	0
ICDHyr	[c]icit + nadp <==> akg + co2 + nadph	Citrate Cycle (TCA)	1	1	1	8	1	1
ICHORSi	[c]chor --> ichor	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ICHORT	[c]h2o + ichor --> 23ddhb + pyr	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ICL	[c]icit --> glx + succ	Anaplerotic reactions	0.2060	0	0	8	1	0.318
IDOND	[c]5dglcn + h + nadh <==> idon-L + nad	Alternate Carbon Metabolism	0.0442	0	0	28	1	0.307
IDOND2	[c]5dglcn + h + nadph --> idon-L + nadp	Alternate Carbon Metabolism	0.0282	0	0	28	1	0.295
IDONT2r	h[e] + idon-L[e] <==> h[c] + idon-L[c]	Transport, Extracellular	0.0159	0	0	0	0.045	0.011
IG3PS	[c]gln-L + prlp --> aicar + eig3p + glu-L + h	Histidine Metabolism	1	1	1	0	1	1
IGPDH	[c]eig3p --> h2o + imacp	Histidine Metabolism	1	1	1	0	1	1
IGPS	[c]2cpr5p + h --> 3ig3p + co2 + h2o	Tyrosine, Tryptophan, and Phenylalanine Metabolism	0.9912	1	1	0	1	0.989
ILEabc	atp[c] + h2o[c] + ile-L[e] --> adp[c] + h[c] + ile-L[c] + pi[c]	Transport, Extracellular	0	0	0	0	1	0
ILEt2r	h[e] + ile-L[e] <==> h[c] + ile-L[c]	Transport, Extracellular	0	0	0	0	1	0
ILETA	[c]akg + ile-L <==> 3mop + glu-L	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
IMPC	[c]h2o + imp <==> fprica	Purine and Pyrimidine Biosynthesis	1	1	1	0	1	1
IMPD	[c]h2o + imp + nad --> h + nadh + xmp	Purine and Pyrimidine Biosynthesis	0.9679	1	1	0	1	0.966

INDOLEt2r	h[e] + indole[e] <==> h[c] + indole[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
INSK	[c]atp + ins --> adp + h + imp	Nucleotide Salvage Pathways	0.0554	0	0	0	1	0.045
INST2	h[e] + ins[e] --> h[c] + ins[c]	Transport, Extracellular	0	0	0	0	0	0
INST2r	h[e] + ins[e] <==> h[c] + ins[c]	Transport, Extracellular	0.0111	0	0	0	1	0.011
IPDDii	[c]ipdp --> dmpp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
IPDPS	[c]h + h2mb4p + nadh --> h2o + ipdp + nad	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
IPMD	[c]3c2hmp + nad --> 3c4mop + h + nadh	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
IPPMla	[c]3c2hmp <==> 2ippm + h2o	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
IPPMlb	[c]2ippm + h2o <==> 3c3hmp	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
IPPS	[c]3mob + accoa + h2o --> 3c3hmp + coa + h	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
Kabc	atp[c] + h2o[c] + k[e] --> adp[c] + h[c] + k[c] + pi[c]	Transport, Extracellular	0	0	0	0	1	0
KARA1i	[c]alac-S + h + nadph --> 23dhmb + nadp	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
KARA2i	[c]2ahbut + h + nadph --> 23dhmp + nadp	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
KAS14	[c]acACP + h + malACP --> ACP + actACP + co2	Membrane Lipid Metabolism	0.4535	0.344	0.471	136	1	1
KAS15	[c]accoa + h + malACP --> actACP + co2 + coa	Membrane Lipid Metabolism	0.5465	0.656	0.529	136	1	1
KAS16	[c]ddcaACP + (2) h + malACP + nadph --> 3hmrsACP + ACP + co2 + nadp	Membrane Lipid Metabolism	1	1	1	0	1	1
KDOCT2	[c]ctp + kdo --> ckdo + ppi	Cell Envelope Biosynthesis	1	1	1	0	1	1
KDOPP	[c]h2o + kdo8p --> kdo + pi	Cell Envelope Biosynthesis	1	1	1	0	1	1
KDOPS	[c]ara5p + h2o + pep --> kdo8p + pi	Cell Envelope Biosynthesis	1	1	1	0	1	1
KG6PDC	[c]3dgulnp + h --> co2 + xu5p-L	Alternate Carbon Metabolism	0	0	0	0	0	0
Kt2r	h[e] + k[e] <==> h[c] + k[c]	Transport, Extracellular	0	0	0	0	1	0
LACZ	[c]h2o + lcts --> gal + glc-D	Alternate Carbon Metabolism	0.0141	0	0	0	0.011	0.011
LCAD	[c]h2o + lald-L + nad <==> (2) h + lac-L + nadh	Alternate Carbon Metabolism	0.0264	0	0	0	0.045	0.034
LCADI	[c]h2o + lald-L + nad --> (2) h + lac-L + nadh	Alternate Carbon Metabolism	0	0	0	0	0	0
LCAR	[c]h + lald-L + nadh <==> 12ppd-S + nad	Alternate Carbon Metabolism	0.0088	0	0	0	0.045	0.011
LCTSt	h[e] + lcts[e] <==> h[c] + lcts[c]	Transport, Extracellular	0.0141	0	0	0	0.011	0.011
LDH_D	[c]lac-D + nad <==> h + nadh + pyr	Pyruvate metabolism	0.0088	0	0	0	1	0.011
LDH_D2	[c]lac-D + q8 --> pyr + q8h2	Oxidative phosphorylation	0	0	0	0	1	0
LEUabc	atp[c] + h2o[c] + leu-L[e] --> adp[c] + h[c] + leu-L[c] + pi[c]	Transport, Extracellular	0	0	0	0	1	0
LEUt2r	h[e] + leu-L[e] <==> h[c] + leu-L[c]	Transport, Extracellular	0	0	0	0	1	0
LEUTAi	[c]4mop + glu-L --> akg + leu-L	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
LGTHL	[c]gthrd + mthgxl --> lgt-S	Methylglyoxal Metabolism	0	0	0	0	1	0
L-LACD2	[c]lac-L + q8 --> pyr + q8h2	Oxidative phosphorylation	0.0232	0	0	4	0.045	0.045
L-LACD3	[c]lac-L + mqn8 --> mql8 + pyr	Oxidative phosphorylation	0.0120	0	0	4	0.045	0.045
L-LACt2r	h[e] + lac-L[e] <==> h[c] + lac-L[c]	Transport, Extracellular	0.0088	0	0	0	0.045	0.011
LPADSS	[c]lipidX + u23ga --> h + lipidAds + udp	Cell Envelope Biosynthesis	1	1	1	0	1	1
LPLIPA1	[c](0.02) agpg_EC + h2o --> g3pg + h + (0.36) hdca + (0.07) hdcea + (0.5) ocdcea + (0.02) ttdca + (0.05) ttdcea	Cell Envelope Biosynthesis	0	0	0	0	1	0
LPLIPA2	[c](0.02) agpe_EC + h2o --> g3pe + h + (0.36) hdca + (0.07) hdcea + (0.5) ocdcea + (0.02) ttdca + (0.05) ttdcea	Cell Envelope Biosynthesis	0	0	0	0	1	0
LPLIPA3	[c](0.02) agpc_EC + h2o --> g3pc + h + (0.36) hdca + (0.07) hdcea + (0.5) ocdcea + (0.02) ttdca + (0.05) ttdcea	Cell Envelope Biosynthesis	0	0	0	0	0	0
LPLIPA4	[c](0.02) agpe_EC + (0.02) pg_EC --> (0.02) apg_EC + g3pe	Cell Envelope Biosynthesis	0	0	0	0	0	0
LPLIPA5	[c](0.02) agpc_EC + (0.02) pg_EC --> (0.02) apg_EC + g3pc	Cell Envelope Biosynthesis	0	0	0	0	0	0
LPLIPA6	[c](0.02) agpg_EC + (0.02) pg_EC --> (0.02) apg_EC + g3pg	Cell Envelope Biosynthesis	0	0	0	0	0	0
LPSSYN_EC	[c](3) adphep-L,D + (2) cdpea + (3) ckdo + lipa + (2) udpg --> (3) adp + (2) cdp + (3) cmp + (10) h + lps_EC + (2) udp	Cell Envelope Biosynthesis	1	1	1	0	1	1
LYSabc	atp[c] + h2o[c] + lys-L[e] --> adp[c] + h[c] + lys-L[c] + pi[c]	Transport, Extracellular	0	0	0	0	1	0
LYSDC	[c]h + lys-L --> 15dap + co2	Threonine and Lysine Metabolism	0	0	0	0	1	0

LYSt2r	h[e] + lys-L[e] <==> h[c] + lys-L[c]	Transport, Extracellular	0	0	0	0	1	0
M1PD	[c]mnl1p + nad <==> f6p + h + nadh	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
MACPD	[c]h + malACP --> acACP + co2	Membrane Lipid Metabolism	0	0	0	0	1	0
MALS	[c]accoa + glx + h2o --> coa + h + mal-L	Anaplerotic reactions	0.6079	1	0	8	1	0.784
MALt2_2	(2) h[e] + mal-L[e] --> (2) h[c] + mal-L[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
MALt2_3	(3) h[e] + mal-L[e] --> (3) h[c] + mal-L[c]	Transport, Extracellular	0	0	0	0	0.011	0
MALTabc	atp[c] + h2o[c] + malt[e] --> adp[c] + h[c] + malt[c] + pi[c]	Transport, Extracellular	0.0141	0	0	0	0.011	0.011
MALTHXabc	atp[c] + h2o[c] + malthx[e] --> adp[c] + h[c] + malthx[c] + pi[c]	Transport, Extracellular	0.0162	0	0	0	0.011	0.011
MALTPTabc	atp[c] + h2o[c] + maltpt[e] --> adp[c] + h[c] + maltpt[c] + pi[c]	Transport, Extracellular	0.0126	0	0	0	0.011	0.011
MALTpts	malt[e] + pep[c] --> malt6p[c] + pyr[c]	Transport, Extracellular	0	0	0	0	0	0
MALTTTabc	atp[c] + h2o[c] + malttr[e] --> adp[c] + h[c] + malttr[c] + pi[c]	Transport, Extracellular	0.0146	0	0	0	0.011	0.011
MALTTTTabc	atp[c] + h2o[c] + maltttr[e] --> adp[c] + h[c] + maltttr[c] + pi[c]	Transport, Extracellular	0.0176	0	0	0	0.011	0.011
MAN1PT2	[c]gdp + h + man1p --> gdpmann + pi	Cell Envelope Biosynthesis	0	0	0	0	0	0
MAN6PI	[c]man6p <==> f6p	Alternate Carbon Metabolism	0.0304	0	0	0	0.023	0.023
MAN6Pt6_2	man6p[e] + (2) pi[c] --> man6p[c] + (2) pi[e]	Transport, Extracellular	0.0146	0	0	0	0.011	0.011
MANAO	[c]mana + nad <==> fruur + h + nadh	Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011
MANpts	man[e] + pep[c] --> man6p[c] + pyr[c]	Transport, Extracellular	0.0158	0	0	0	0.011	0.011
MCITD	[c]2mcit --> 2mcacn + h2o	Alternate Carbon Metabolism	0.0118	0	0	0	1	0.023
MCITL2	[c]micit <==> pyr + succ	Alternate Carbon Metabolism	0.0118	0	0	0	1	0.023
MCITS	[c]h2o + oaa + ppcoa --> 2mcit + coa + h	Alternate Carbon Metabolism	0.0118	0	0	0	1	0.023
MCOATA	[c]ACP + malcoa <==> coa + malACP	Membrane Lipid Metabolism	1	1	1	0	1	1
MDH	[c]mal-L + nad <==> h + nadh + oaa	Citrate Cycle (TCA)	0.9952	1	1	28	1	1
MDH2	[c]mal-L + q8 --> oaa + q8h2	Citrate Cycle (TCA)	0	0	0	0	1	0
MDH3	[c]mal-L + mqn8 --> mql8 + oaa	Citrate Cycle (TCA)	0	0	0	0	1	0
MDRPD	[c]5mdru1p --> dkmpp + h2o	Arginine and Proline Metabolism	1	1	1	0	1	1
ME1	[c]mal-L + nad --> co2 + nadh + pyr	Anaplerotic reactions	0.0275	0	0	16	1	0.182
ME2	[c]mal-L + nadp --> co2 + nadph + pyr	Anaplerotic reactions	0.2015	0	0	16	1	0.295
MECDPDH	[c]2mecdp + h --> h2mb4p + h2o	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
MECDPS	[c]2p4c2me --> 2mecdp + cmp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
MELIBt2	h[e] + melib[e] --> h[c] + melib[c]	Transport, Extracellular	0.0149	0	0	0	0.011	0.011
MEPCT	[c]2me4p + ctp + h --> 4c2me + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
METabc	atp[c] + h2o[c] + met-L[e] --> adp[c] + h[c] + met-L[c] + pi[c]	Transport, Extracellular	0	0	0	0	0	0
METAT	[c]atp + h2o + met-L --> amet + pi + ppi	Methionine Metabolism	1	1	1	0	1	1
METDabc	atp[c] + h2o[c] + met-D[e] --> adp[c] + h[c] + met-D[c] + pi[c]	Transport, Extracellular	0	0	0	0	0	0
METS	[c]5mthf + hcys-L --> met-L + thf	Methionine Metabolism	1	1	1	0	1	1
MGSA	[c]dhap --> mthgxl + pi	Methylglyoxal Metabolism	0	0	0	0	1	0
MI1PP	[c]h2o + mi1p-D --> inost + pi	Cell Envelope Biosynthesis	0	0	0	0	0	0
MICITD	[c]2mcacn + h2o --> micit	Alternate Carbon Metabolism	0.0118	0	0	0	1	0.023
MLTG1	[c]h2o + malttr --> glc-D + malt	Alternate Carbon Metabolism	0.0611	0	0	0	0.045	0.045
MLTG2	[c]h2o + maltttr --> glc-D + malttr	Alternate Carbon Metabolism	0.0464	0	0	0	0.057	0.034
MLTG3	[c]h2o + maltpt --> glc-D + maltttr	Alternate Carbon Metabolism	0	0	0	0	1	0
MLTG4	[c]h2o + malthx --> glc-D + maltpt	Alternate Carbon Metabolism	0	0	0	0	1	0
MLTG5	[c]h2o + malthp --> glc-D + malthx	Alternate Carbon Metabolism	0	0	0	0	1	0
MLTP1	[c]maltpt + pi <==> g1p + maltttr	Alternate Carbon Metabolism	0.0470	0	0	10	1	0.057
MLTP2	[c]malthx + pi <==> g1p + maltpt	Alternate Carbon Metabolism	0.0320	0	0	10	1	0.057
MLTP3	[c]malthp + pi <==> g1p + malthx	Alternate Carbon Metabolism	0.0207	0	0	10	1	0.057
MMCD	[c]h + mmcoa-S --> co2 + ppcoa	Alternate Carbon Metabolism	0	0	0	0	1	0
MME	[c]mmcoa-R <==> mmcoa-S	Alternate Carbon Metabolism	0	0	0	0	1	0
MMM2	[c]succoa --> mmcoa-R	Alternate Carbon Metabolism	0	0	0	0	1	0

MNLpts	mn1[e] + pep[c] --> mn1p[c] + pyr[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
MNNH	[c]mana --> 2ddglcn + h2o	Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011
MOAT	[c]ckdo + lipidA --> cmp + h + kdolipid4	Cell Envelope Biosynthesis	1	1	1	0	1	1
MOAT2	[c]ckdo + kdolipid4 --> cmp + h + kdo2lipid4	Cell Envelope Biosynthesis	1	1	1	0	1	1
MOHMT	[c]3mob + h2o + mlthf --> 2dhp + thf	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
MTAN	[c]5mta + h2o --> 5mtr + ade	Arginine and Proline Metabolism	1	1	1	0	1	1
MTHFC	[c]h2o + methf <==> 10fthf	Folate Metabolism	1	1	1	0	1	1
MTHFD	[c]mlthf + nadp <==> h + methf + nadph	Folate Metabolism	1	1	1	0	1	1
MTHFR2	[c]h + mlthf + nadh --> 5mthf + nad	Folate Metabolism	1	1	1	0	1	1
MTRI	[c]5mdr1p <==> 5mdru1p	Arginine and Proline Metabolism	1	1	1	0	1	1
MTRK	[c]5mtr + atp --> 5mdr1p + adp + h	Arginine and Proline Metabolism	1	1	1	0	1	1
NACODA	[c]acg5sa + h2o --> ac + glu5sa	Arginine and Proline Metabolism	0	0	0	0	1	0
NACUP	nac[e] --> nac[c]	Transport, Extracellular	0	0	0	0	0	0
NADDP	[c]h2o + nad --> amp + (2) h + nmn	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
NADDPe	[e]h2o + nad --> amp + (2) h + nmn	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
NADH10	[c]h + mqn8 + nadh --> mql8 + nad	Oxidative phosphorylation	0	0	0	0	1	0
NADH5	[c]h + nadh + q8 --> nad + q8h2	Oxidative phosphorylation	0	0	0	0	1	0
NADH6	(4.5) h[c] + nadh[c] + q8[c] --> (3.5) h[e] + nad[c] + q8h2[c]	Oxidative phosphorylation	0.7695	1	0	0	1	1
NADH7	(3) h[c] + mqn8[c] + nadh[c] --> (2) h[e] + mql8[c] + nad[c]	Oxidative phosphorylation	0	0	0	0	1	0
NADH8	2dmmq8[c] + (3.8) h[c] + nadh[c] --> 2dmmql8[c] + (2.8) h[e] + nad[c]	Oxidative phosphorylation	0	0	0	0	1	0
NADH9	[c]2dmmq8 + h + nadh --> 2dmmql8 + nad	Oxidative phosphorylation	0	0	0	0	1	0
NADK	[c]atp + nad --> adp + h + nadp	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
NADPPPS	[c]h2o + nadp --> nad + pi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
NADS1	[c]atp + dnad + nh4 --> amp + h + nad + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
NAMNPP	[c]atp + h2o + nac + prpp --> adp + nicrnt + pi + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
Nat3_1	h[e] + na1[c] <==> h[c] + na1[e]	Transport, Extracellular	0	0	0	0	1	0
Nat3_1.5	(3) h[e] + (2) na1[c] --> (3) h[c] + (2) na1[e]	Transport, Extracellular	0	0	0	0	1	0
Nat3_2	(2) h[e] + na1[c] --> (2) h[c] + na1[e]	Transport, Extracellular	0	0	0	0	1	0
NDPK1	[c]atp + gdp <==> adp + gtp	Nucleotide Salvage Pathways	1	1	1	136	1	1
NDPK2	[c]atp + udp <==> adp + utp	Nucleotide Salvage Pathways	1	1	1	126	1	1
NDPK3	[c]atp + cdp <==> adp + ctp	Nucleotide Salvage Pathways	1	1	1	136	1	1
NDPK4	[c]atp + dtdp <==> adp + dttp	Nucleotide Salvage Pathways	1	1	1	0	1	1
NDPK5	[c]atp + dgdg <==> adp + dgtp	Nucleotide Salvage Pathways	0.5969	0.7	0.667	136	1	1
NDPK6	[c]atp + dudp <==> adp + dutp	Nucleotide Salvage Pathways	0.3526	0.248	0.475	126	1	0.943
NDPK7	[c]atp + dcdp <==> adp + dctp	Nucleotide Salvage Pathways	0.6232	0.834	0.525	136	1	1
NDPK8	[c]atp + dadp <==> adp + datp	Nucleotide Salvage Pathways	0.6736	0.8	0.515	136	1	1
NH3t	nh4[e] <==> nh4[c]	Transport, Extracellular	0.9959	1	1	2	1	1
NMNAT	[c]atp + h + nmn --> nad + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
NMNDA	[c]h2o + nmn --> nh4 + nicrnt	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
NMNN	[c]h2o + nmn --> h + ncam + r5p	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
NMNP	nmn[e] --> nmn[c]	Transport, Extracellular	0	0	0	0	0	0
NMnt7	h2o[c] + nmn[e] --> h[c] + ncam[c] + r5p[c]	Transport, Extracellular	0	0	0	0	0	0
NNAM	[c]h2o + ncam --> nac + nh4	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
NNAT	[c]atp + h + nicrnt --> dnad + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
NNDMBRT	[c]dmbzid + nicrnt --> 5prdmzbz + h + nac	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
NNDPR	[c](2) h + prpp + quln --> co2 + nicrnt + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
NO2t2r	h[e] + no2[e] <==> h[c] + no2[c]	Transport, Extracellular	0	0	0	0	0	0
NO3R1	(2) h[c] + no3[c] + q8h2[c] --> (2) h[e] + h2o[c] + no2[c] + q8[c]	Oxidative phosphorylation	0	0	0	0	0	0

NO3R2	(2) h[c] + mql8[c] + no3[c] --> (2) h[e] + h2o[c] + mqn8[c] + no2[c]	Oxidative phosphorylation	0	0	0	0	0	0
NO3t7	no2[c] + no3[e] --> no2[e] + no3[c]	Transport, Extracellular	0	0	0	0	0	0
NPHS	[c]sbzcoa --> coa + dhna	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
NTD1	[c]dump + h2o --> duri + pi	Nucleotide Salvage Pathways	0.2180	0.48	0.044	90	1	0.602
NTD10	[c]h2o + xmp --> pi + xtsn	Nucleotide Salvage Pathways	0.0352	0	0	0	1	0.045
NTD11	[c]h2o + imp --> ins + pi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTD2	[c]h2o + ump --> pi + uri	Nucleotide Salvage Pathways	0.0366	0	0	0	1	0.034
NTD3	[c]dcmp + h2o --> dcyt + pi	Nucleotide Salvage Pathways	0.0019	0	0	2	1	0.011
NTD4	[c]cmp + h2o --> cytd + pi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTD5	[c]dtmp + h2o --> pi + thymd	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTD6	[c]damp + h2o --> dad-2 + pi	Nucleotide Salvage Pathways	0.1660	0.328	0.029	90	1	0.602
NTD7	[c]amp + h2o --> adn + pi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTD8	[c]dgmp + h2o --> dgsn + pi	Nucleotide Salvage Pathways	0.2709	0.192	0.926	90	1	0.602
NTD9	[c]gmp + h2o --> gsn + pi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPP1	[c]dgtp + h2o --> dgmp + h + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPP2	[c]gtp + h2o --> gmp + h + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPP3	[c]dctp + h2o --> dcmp + h + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPP4	[c]ctp + h2o --> cmp + h + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPP5	[c]datp + h2o --> damp + h + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPP6	[c]atp + h2o --> amp + h + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPP7	[c]dttp + h2o --> dtmp + h + ppi	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPP8	[c]h2o + utp --> h + ppi + ump	Nucleotide Salvage Pathways	0	0	0	0	1	0
NTPTP1	[c]dgtp + h2o --> dgsn + pppi	Nucleotide Salvage Pathways	0	0	0	0	0	0
NTPTP2	[c]gtp + h2o --> gsn + pppi	Nucleotide Salvage Pathways	0	0	0	0	0	0
NTRIR2x	[c](5) h + (3) nadh + no2 --> (2) h2o + (3) nad + nh4	Oxidative phosphorylation	0	0	0	0	0	0
O2t	o2[e] <==> o2[c]	Transport, Extracellular	0.7695	1	0	0	1	1
OBTFL	[c]2obut + coa --> for + ppcoa	Alternate Carbon Metabolism	0.0118	0	0	0	1	0.023
OCBT	[c]cbp + orn <==> citr-L + h + pi	Arginine and Proline Metabolism	0.9912	1	1	0	1	0.989
OCDCat2	h[e] + ocdca[e] --> h[c] + ocdca[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
OCTDPS	[c]frdp + (5) ipdp --> octdp + (5) ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
OHPBAT	[c]glu-L + ohpb <==> akp + phthr	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
OHPHM	[c]2ohph + amet --> 2omph + ahcys + h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
OMBZLM	[c]2ombzl + amet --> 2ommbL + ahcys + h	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
OMCDC	[c]3c4mop + h --> 4mop + co2	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
OMMBLHX	[c]2ommbL + (0.5) o2 --> 2omhmbL	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
OMPDC	[c]h + orot5p --> co2 + ump	Purine and Pyrimidine Biosynthesis	0.9485	1	1	0	1	0.955
OMPHHX	[c]2omph + (0.5) o2 --> 2ombzl	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
OP4ENH	[c]h2o + op4en --> 4h2opntn	Alternate Carbon Metabolism	0.0264	0	0	0	0.034	0.034
OPHBDC	[c]3ophb + h --> 2oph + co2	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
OPHHX	[c]2oph + (0.5) o2 --> 2ohph	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
ORNabc	atp[c] + h2o[c] + orn[e] --> adp[c] + h[c] + orn[c] + pi[c]	Transport, Extracellular	0	0	0	0	1	0
ORNDC	[c]h + orn --> co2 + ptrc	Arginine and Proline Metabolism	0.9824	1	1	0	1	0.977
ORNTA	[c]akg + orn --> glu-L + glu5sa	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
ORPT	[c]orot5p + ppi <==> orot + prpp	Purine and Pyrimidine Biosynthesis	0.9485	1	1	0	1	0.955
OXGDC2	[c]akg + h + thmpp --> co2 + ssaltpp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
P5CD	[c]1pyr5c + (2) h2o + nad --> glu-L + h + nadh	Arginine and Proline Metabolism	0.0176	0	0	0	1	0.023
P5CR	[c]1pyr5c + (2) h + nadph --> nadp + pro-L	Arginine and Proline Metabolism	0.9912	1	1	0	1	0.989
PACCOAL	[c]atp + coa + pac --> amp + phaccoa + ppi	Alternate Carbon Metabolism	0	0	0	0	0	0
PANTS	[c]ala-B + atp + pant-R --> amp + h + pnto-R + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1

PAPA_EC	[c]h2o + (0.02) pa_EC --> (0.02) 12dgr_EC + pi	Cell Envelope Biosynthesis	0	0	0	0	1	0
PAPPT3	[c]udcpp + ugmda --> uagmda + ump	Cell Envelope Biosynthesis	1	1	1	0	1	1
PAPSR	[c]paps + trdrd --> (2) h + pap + so3 + trdox	Cysteine Metabolism	1	1	1	0	1	1
PASYN_EC	[c]glyc3p + (0.14) hdeACP + (0.04) myrsACP + octeACP + (0.72) palmACP + (0.1) tdeACP --> (2) ACP + (0.02) pa_EC	Membrane Lipid Metabolism	1	1	1	0	1	1
PDH	[c]coa + nad + pyr --> accoa + co2 + nadh	Glycolysis/Gluconeogenesis	0.6682	1	0	8	1	0.830
PDX5PO	[c]o2 + pdx5p <==> h2o2 + pydx5p	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
PDX5PS	[c]dxy15p + nad + phthr --> co2 + h + (2) h2o + nadh + pdx5p + pi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
PDXPP	[c]h2o + pdx5p --> pi + pydxn	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
PEAMNO	[c]h2o + o2 + peamn --> h2o2 + nh4 + pacald	Alternate Carbon Metabolism	0	0	0	0	0	0
PEPT_EC	[c]cmp + h + (0.02) pe_EC <==> (0.02) 12dgr_EC + cdpea	Cell Envelope Biosynthesis	1	1	1	0	1	1
PERD	[c]4per + nad <==> h + nadh + ohpb	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
PFK	[c]atp + f6p --> adp + fdp + h	Glycolysis/Gluconeogenesis	0.2683	1	1	64	1	0.398
PFK_2	[c]atp + tag6p-D --> adp + h + tagdp-D	Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011
PFL	[c]coa + pyr --> accoa + for	Pyruvate metabolism	0.2834	0	1	0	1	0.068
PGAMT	[c]gam1p <==> gam6p	Cell Envelope Biosynthesis	1	1	1	0	1	1
PGCD	[c]3pg + nad --> 3php + h + nadh	Glycine and Serine Metabolism	0.9912	1	1	0	1	0.989
PGI	[c]g6p <==> f6p	Glycolysis/Gluconeogenesis	1	1	1	0	1	1
PGK	[c]3pg + atp <==> 13dpg + adp	Glycolysis/Gluconeogenesis	1	1	1	0	1	1
PGL	[c]6pgl + h2o --> 6pgc + h	Pentose Phosphate Cycle	0.3876	1	0	0	1	0.500
PGLYCP	[c]2pglyc + h2o --> glyclt + pi	Alternate Carbon Metabolism	0	0	0	0	0	0
PGM	[c]2pg <==> 3pg	Glycolysis/Gluconeogenesis	1	1	1	3	1	1
PGMT	[c]g1p <==> g6p	Alternate Carbon Metabolism	1	1	1	0	1	1
PGPP_EC	[c]h2o + (0.02) pgp_EC --> (0.02) pg_EC + pi	Membrane Lipid Metabolism	1	1	1	0	1	1
PGSA_EC	[c](0.02) cdpdag1 + glyc3p <==> cmp + h + (0.02) pgp_EC	Membrane Lipid Metabolism	1	1	1	0	1	1
PHEt2r	h[e] + phe-L[e] <==> h[c] + phe-L[c]	Transport, Extracellular	0	0	0	0	1	0
PHETA1	[c]akg + phe-L <==> glu-L + phpyr	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
PIabc	atp[c] + h2o[c] + pi[e] --> adp[c] + h[c] + (2) pi[c]	Transport, Extracellular	0	0	0	0	1	0
PIt2r	h[e] + pi[e] <==> h[c] + pi[c]	Transport, Extracellular	1	1	1	0	1	1
PLIPA1	[c]h2o + (0.02) pg_EC --> (0.02) agpg_EC + h + (0.36) hdca + (0.07) hdcea + (0.5) ocdcea + (0.02) ttdca + (0.05) ttdcea	Cell Envelope Biosynthesis	0	0	0	0	1	0
PLIPA2	[c]h2o + (0.02) pe_EC --> (0.02) agpe_EC + h + (0.36) hdca + (0.07) hdcea + (0.5) ocdcea + (0.02) ttdca + (0.05) ttdcea	Cell Envelope Biosynthesis	0	0	0	0	1	0
PLIPA3	[c]h2o + (0.02) pc_EC --> (0.02) agpc_EC + h + (0.36) hdca + (0.07) hdcea + (0.5) ocdcea + (0.02) ttdca + (0.05) ttdcea	Cell Envelope Biosynthesis	0	0	0	0	0	0
PMANM	[c]man1p <==> man6p	Alternate Carbon Metabolism	0	0	0	0	0	0
PMDPHT	[c]5aprbu + h2o --> 4r5au + pi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
PMPK	[c]4ampm + atp --> 2mahmp + adp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
PNTK	[c]atp + pnto-R --> 4ppan + adp + h	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
PNTot4	na1[e] + pnto-R[e] --> na1[c] + pnto-R[c]	Transport, Extracellular	0	0	0	0	0	0
POX	[c]h2o + pyr + q8 --> ac + co2 + q8h2	Oxidative phosphorylation	0	0	0	0	1	0
PPA	[c]h2o + ppi --> h + (2) pi	Anaplerotic reactions	1	1	1	0	1	1
PPAKr	[c]adp + ppap <==> atp + ppa	Alternate Carbon Metabolism	0	0	0	0	0	0
PPBNGS	[c](2) 5aop --> h + (2) h2o + ppbng	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
PPC	[c]co2 + h2o + pep --> h + oaa + pi	Anaplerotic reactions	0.6684	1	1	6	1	0.580
PPCDC	[c]4ppcys + h --> co2 + pan4p	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
PPCK	[c]atp + oaa --> adp + co2 + pep	Anaplerotic reactions	0.2501	0	0	18	1	0.330
PPCSCT	[c]ppcoa + succ --> ppa + succoa	Alternate Carbon Metabolism	0	0	0	0	0	0
PPM	[c]r1p <==> r5p	Alternate Carbon Metabolism	1	1	1	0	1	1

PPM2	[c]2dr1p <==> 2dr5p	Alternate Carbon Metabolism	0.7134	1	1	0	1	0.659
PPNCL2	[c]4ppan + ctp + cys-L --> 4ppcys + cmp + h + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
PPND	[c]nad + pphn --> 34hpp + co2 + nadh	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
PPNDH	[c]h + pphn --> co2 + h2o + phpyr	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
PPPGO	[c](1.5) o2 + pppg9 --> (3) h2o + ppp9	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
PPPNDO	[c]h + nadh + o2 + pppn --> cechddd + nad	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
PPPNt2r	h[e] + pppn[e] <==> h[c] + pppn[c]	Putative Transporters	0.0088	0	0	0	0.011	0.011
PPS	[c]atp + h2o + pyr --> amp + (2) h + pep + pi	Glycolysis/Gluconeogenesis	0.0789	0	0	2	1	0.125
PPTGS	[c]uaagmda --> h + peptido_EC + udcdpd	Cell Envelope Biosynthesis	1	1	1	0	1	1
PRAGSr	[c]atp + gly + pram <==> adp + gar + h + pi	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
PRAli	[c]pran --> 2cpr5p	Tyrosine, Tryptophan, and Phenylalanine Metabolism	0.9912	1	1	0	1	0.989
PRAIS	[c]atp + fpram --> adp + air + (2) h + pi	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
PRAMPC	[c]h2o + prbamp --> prfp	Histidine Metabolism	1	1	1	0	1	1
PRASCS	[c]5aizc + asp-L + atp <==> 25aics + adp + h + pi	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
PRATPP	[c]h2o + prbatp --> h + ppi + prbamp	Histidine Metabolism	1	1	1	0	1	1
PRFGS	[c]atp + fgam + gln-L + h2o --> adp + fpram + glu-L + h + pi	Purine and Pyrimidine Biosynthesis	0.9126	1	1	0	1	0.920
PRMICli	[c]prfp --> prlp	Histidine Metabolism	1	1	1	0	1	1
PROabc	atp[c] + h2o[c] + pro-L[e] --> adp[c] + h[c] + pi[c] + pro-L[c]	Transport, Extracellular	0	0	0	0	1	0
PROD2	[c]fad + pro-L --> 1pyr5c + fadh2 + h	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
PROt2r	h[e] + pro-L[e] <==> h[c] + pro-L[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
PROt4	na1[e] + pro-L[e] --> na1[c] + pro-L[c]	Transport, Extracellular	0	0	0	0	0	0
PRPPS	[c]atp + r5p <==> amp + h + prpp	Histidine Metabolism	1	1	1	0	1	1
PSCVT	[c]pep + skm5p <==> 3psme + pi	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
PSD_EC	[c]h + (0.02) ps_EC --> co2 + (0.02) pe_EC	Membrane Lipid Metabolism	1	1	1	0	1	1
PSERT	[c]3php + glu-L --> akg + pser-L	Glycine and Serine Metabolism	0.9912	1	1	0	1	0.989
PSP_L	[c]h2o + pser-L --> pi + ser-L	Glycine and Serine Metabolism	0.9912	1	1	0	1	0.989
PSSA_EC	[c](0.02) cdpdag1 + ser-L <==> cmp + h + (0.02) ps_EC	Membrane Lipid Metabolism	1	1	1	0	1	1
PTA2	[c]pi + ppcoa --> coa + ppap	Alternate Carbon Metabolism	0	0	0	0	0	0
PTAr	[c]accoa + pi <==> actp + coa	Pyruvate metabolism	1	1	1	0	1	1
PTPATi	[c]atp + h + pan4p --> dpcoa + ppi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
PTRCabc	atp[c] + h2o[c] + ptrc[e] --> adp[c] + h[c] + pi[c] + ptrc[c]	Transport, Extracellular	0	0	0	0	1	0
PTRCORNt7	orn[c] + ptrc[e] <==> orn[e] + ptrc[c]	Transport, Extracellular	0.0176	0	0	0	1	0.023
PTRCt2r	h[e] + ptrc[e] <==> h[c] + ptrc[c]	Transport, Extracellular	0.0264	0	0	0	1	0.034
PTRCTA	[c]akg + ptrc --> 4abutn + glu-L	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
PUNP1	[c]adn + pi <==> ade + r1p	Nucleotide Salvage Pathways	0.9983	1	1	93	1	1
PUNP2	[c]dad-2 + pi <==> 2dr1p + ade	Nucleotide Salvage Pathways	0.1877	0.328	0.029	93	1	0.614
PUNP3	[c]gsn + pi <==> gua + r1p	Nucleotide Salvage Pathways	0.2905	0.192	0.926	90	1	0.614
PUNP4	[c]dgsn + pi <==> 2dr1p + gua	Nucleotide Salvage Pathways	0.2809	0.192	0.926	90	1	0.614
PUNP5	[c]jins + pi <==> hxan + r1p	Nucleotide Salvage Pathways	0.0379	0	0	4	1	0.034
PUNP6	[c]din + pi <==> 2dr1p + hxan	Nucleotide Salvage Pathways	0.0255	0	0	4	1	0.034
PUNP7	[c]pi + xtsn <==> r1p + xan	Nucleotide Salvage Pathways	0.0463	0	0	0	1	0.057
PYAM5PO	[c]h2o + o2 + pyam5p --> h2o2 + nh4 + pydx5p	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
PYDAMK	[c]atp + pydam --> adp + h + pyam5p	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
PYDXK	[c]atp + pydx --> adp + h + pydx5p	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
PYDXNK	[c]atp + pydxn --> adp + h + pdx5p	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
PYDXPP	[c]h2o + pydx5p --> pi + pydx	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	1	0
PYK	[c]adp + h + pep --> atp + pyr	Glycolysis/Gluconeogenesis	0.5998	0.288	0.490	83	1	0.705
PYNP2r	[c]pi + uri <==> r1p + ura	Nucleotide Salvage Pathways	0.2950	0.48	0.044	90	1	0.659
PYRt2r	h[e] + pyr[e] <==> h[c] + pyr[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011

QULNS	[c]dhap + iasp --> h + (2) h2o + pi + quln	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
RBFK	[c]atp + ribflv --> adp + fmh + h	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
RBFSa	[c]4r5au + db4p --> dmlz + (2) h2o + pi	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
RBFSb	[c](2) dmlz --> 4r5au + ribflv	Cofactor and Prosthetic Group Biosynthesis	1	1	1	0	1	1
RBK	[c]atp + rib-D --> adp + h + r5p	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
RBK_L1	[c]atp + rbl-L --> adp + h + ru5p-L	Alternate Carbon Metabolism	0.0162	0	0	0	0.011	0.011
RBP4E	[c]ru5p-L <==> xu5p-D	Alternate Carbon Metabolism	0.0162	0	0	0	0.011	0.011
RHCCE	[c]rhcys --> dhptd + hcys-L	Methionine Metabolism	0	0	0	0	0	0
RIBabc	atp[c] + h2o[c] + rib-D[e] --> adp[c] + h[c] + pi[c] + rib-D[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
RMI	[c]rmn <==> rml	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
RMK	[c]atp + rml --> adp + h + rml1p	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
RMNt	h[e] + rmn[e] --> h[c] + rmn[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
RMPA	[c]rml1p <==> dhap + lald-L	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
RNDR1	[c]adp + trdrd --> dadp + h2o + trdox	Nucleotide Salvage Pathways	0.6633	0.818	0.505	136	1	1
RNDR2	[c]gdp + trdrd --> dgdp + h2o + trdox	Nucleotide Salvage Pathways	0.6396	0.676	0.681	136	1	1
RNDR3	[c]cdp + trdrd --> dcdp + h2o + trdox	Nucleotide Salvage Pathways	0.6232	0.834	0.525	136	1	1
RNDR4	[c]trdrd + udp --> dudp + h2o + trdox	Nucleotide Salvage Pathways	0.5909	0.752	0.525	126	1	0.943
RNTR1	[c]atp + trdrd --> datp + h2o + trdox	Nucleotide Salvage Pathways	0.3606	0.228	0.495	136	1	1
RNTR2	[c]gtp + trdrd --> dgtp + h2o + trdox	Nucleotide Salvage Pathways	0.4631	0.342	0.632	136	1	1
RNTR3	[c]ctp + trdrd --> dctp + h2o + trdox	Nucleotide Salvage Pathways	0.3774	0.166	0.475	136	1	1
RNTR4	[c]trdrd + utp --> dutp + h2o + trdox	Nucleotide Salvage Pathways	0.3474	0.248	0.475	126	1	0.943
RPE	[c]ru5p-D <==> xu5p-D	Pentose Phosphate Cycle	1	1	1	0	1	1
RPI	[c]r5p <==> ru5p-D	Pentose Phosphate Cycle	1	1	1	0	1	1
RZ5PP	[c]5prdbmbz + h2o --> pi + rdbmbzi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
S7PI	[c]s7p --> gmhep7p	Cell Envelope Biosynthesis	1	1	1	0	1	1
SADH	[c](2) h + (2) h2o + sucarg --> co2 + (2) nh4 + sucorn	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
SADT2	[c]atp + gtp + h2o + so4 --> aps + gdp + pi + ppi	Cysteine Metabolism	1	1	1	0	1	1
SBTPD	[c]nad + sbt6p <==> f6p + h + nadh	Alternate Carbon Metabolism	0.0129	0	0	0	0.011	0.011
SBTPts	pep[c] + sbt-D[e] --> pyr[c] + sbt6p[c]	Transport, Extracellular	0.0129	0	0	0	0.011	0.011
SDPDS	[c]h2o + sl26da --> 26dap-LL + succ	Threonine and Lysine Metabolism	1	1	1	0	1	1
SDPTA	[c]akg + sl26da <==> glu-L + sl2a6o	Threonine and Lysine Metabolism	1	1	1	0	1	1
SELNPS	[c]atp + h2o + seln --> amp + pi + selnp	Unassigned	0	0	0	0	0	0
SERASr	[c]atp + h + ser-L <==> ppi + seramp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
SERAT	[c]accoa + ser-L <==> acser + coa	Cysteine Metabolism	1	1	1	0	1	1
SERD_D	[c]ser-D --> nh4 + pyr	Glycine and Serine Metabolism	0.0088	0	0	0	0.011	0.011
SERD_L	[c]ser-L --> nh4 + pyr	Glycine and Serine Metabolism	0.0078	0	0	1	1	0.011
SERt2r	h[e] + ser-L[e] <==> h[c] + ser-L[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
SERt4	na1[e] + ser-L[e] --> na1[c] + ser-L[c]	Transport, Extracellular	0	0	0	0	0	0
SGDS	[c]h2o + sucglu --> glu-L + succ	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
SGSAD	[c]h2o + nad + sucgsa --> (2) h + nadh + sucglu	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
SHCHCS2	[c]ichor + ssaltpp --> 2shchc + pyr + thmpp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
SHCHD2	[c]nad + shcl --> h + nadh + srch	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
SHCHF	[c]fe2 + srch --> (3) h + sheme	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
SHK3Dr	[c]3dhsk + h + nadph <==> nadp + skm	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
SHKK	[c]atp + skm --> adp + h + skm5p	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
SHSL1	[c]cys-L + suchms --> cyst-L + h + succ	Methionine Metabolism	1	1	1	0	1	1
SOTA	[c]akg + sucorn --> glu-L + sucgsa	Arginine and Proline Metabolism	0.0088	0	0	0	1	0.011
SPMDabc	atp[c] + h2o[c] + spmd[e] --> adp[c] + h[c] + pi[c] + spmd[c]	Transport, Extracellular	0	0	0	0	0	0
SPMDAT1	[c]accoa + spmd --> N1aspmc + coa + h	Arginine and Proline Metabolism	0	0	0	0	0	0

SPMDAT2	[c]accoa + spmd --> coa + h + n8aspm	Arginine and Proline Metabolism	0	0	0	0	0	0
SPMS	[c]ametam + ptrc --> 5mta + h + spmd	Arginine and Proline Metabolism	1	1	1	0	1	1
SPODM	[c](2) h + (2) o2- --> h2o2 + o2	Unassigned	0	0	0	0	0	0
SSALx	[c]h2o + nad + succsal --> (2) h + nadh + succ	Arginine and Proline Metabolism	0.0032	0	0	2	1	0.023
SSALy	[c]h2o + nadp + succsal --> (2) h + nadph + succ	Arginine and Proline Metabolism	0.0164	0	0	2	1	0.023
SUCBZL	[c]atp + coa + sucbz --> amp + ppi + sbzcoa	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
SUCBZS	[c]2shchc --> h2o + sucbz	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
SUCCabc	atp[c] + h2o[c] + succ[e] --> adp[c] + h[c] + pi[c] + succ[c]	Putative Transporters	0	0	0	0	1	0
SUCCt2_2	(2) h[e] + succ[e] --> (2) h[c] + succ[c]	Transport, Extracellular	0.0213	0	0	4	1	0.045
SUCCt2_3	(3) h[e] + succ[e] --> (3) h[c] + succ[c]	Transport, Extracellular	0	0	0	0	1	0
SUCCt2b	h[c] + succ[c] --> h[e] + succ[e]	Transport, Extracellular	0.2305	0	1	0	1	0
SUCD1i	[c]fad + succ --> fadh2 + fum	Citrate Cycle (TCA)	0.7695	1	0	88	1	1
SUCD4	[c]fadh2 + q8 <==> fad + q8h2	Oxidative phosphorylation	0.7695	1	0	88	1	1
SUCFUMt	fum[e] + succ[c] <==> fum[c] + succ[e]	Transport, Extracellular	0.0178	0	0	4	1	0.045
SUCOAS	[c]atp + coa + succ <==> adp + pi + succoa	Citrate Cycle (TCA)	0.9983	1	1	8	1	1
SUCpts	pep[c] + sucr[e] --> pyr[c] + suc6p[c]	Transport, Extracellular	0.0166	0	0	0	0.011	0.011
SULabc	atp[c] + h2o[c] + so4[e] --> adp[c] + h[c] + pi[c] + so4[c]	Transport, Extracellular	1	1	1	0	1	1
SULR	[c](3) h2o + h2s + (3) nadp <==> (5) h + (3) nadph + so3	Cysteine Metabolism	1	1	1	0	1	1
TAGURr	[c]altrn + nad <==> h + nadh + tagur	Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011
TALA	[c]g3p + s7p <==> e4p + f6p	Pentose Phosphate Cycle	1	1	1	0	1	1
TARTD	[c]tartr-L --> h2o + oaa	Alternate Carbon Metabolism	0.0088	0	0	0	0.011	0.011
TARTRi7	succ[c] + tartr-L[e] <==> succ[e] + tartr-L[c]	Putative Transporters	0.0088	0	0	0	0.011	0.011
TAUDO	[c]akg + o2 + taur --> aacald + co2 + h + so3 + succ	Alternate Carbon Metabolism	0	0	0	0	0	0
TAURabc	atp[c] + h2o[c] + taur[e] --> adp[c] + h[c] + pi[c] + taur[c]	Transport, Extracellular	0	0	0	0	0	0
TDPADGAT	[c]accoa + dtdp4addg --> coa + dtdp4aaddg + h	Cell Envelope Biosynthesis	0	0	0	0	0	0
TDPAGTA	[c]dtdp4d6dg + glu-L --> akg + dtdp4addg	Cell Envelope Biosynthesis	0	0	0	0	0	0
TDPDRE	[c]dtdp4d6dg --> dtdp4d6dm	Cell Envelope Biosynthesis	0	0	0	0	0	0
TDPDRR	[c]dtdp4d6dm + h + nadph --> dtdprmn + nadp	Cell Envelope Biosynthesis	0	0	0	0	0	0
TDPGDH	[c]dtdpglu --> dtdp4d6dg + h2o	Cell Envelope Biosynthesis	0	0	0	0	0	0
TDSK	[c]atp + lipidAds --> adp + h + lipidA	Cell Envelope Biosynthesis	1	1	1	0	1	1
TEST_AKGDH	[c]akg + coa + nad --> co2 + nadh + succoa	Citrate Cycle (TCA)	0.7473	1	0	8	1	0.966
TEST_NADTRHD	[c]nad + nadph --> nadh + nadp	Oxidative phosphorylation	0.1444	0	0	28	1	0.295
TGBPA	[c]tagdp-D <==> dhap + g3p	Alternate Carbon Metabolism	0.0133	0	0	0	0.011	0.011
THD2	(2) h[e] + nadh[c] + nadp[c] --> (2) h[c] + nad[c] + nadph[c]	Oxidative phosphorylation	0.4280	0	1	0	1	0.273
THDPS	[c]h2o + succoa + thdp --> coa + sl2a6o	Threonine and Lysine Metabolism	1	1	1	0	1	1
THMabc	atp[c] + h2o[c] + thm[e] --> adp[c] + h[c] + pi[c] + thm[c]	Transport, Extracellular	0	0	0	0	0	0
THMDt2	h[e] + thymd[e] --> h[c] + thymd[c]	Transport, Extracellular	0	0	0	0	0	0
THMDt2r	h[e] + thymd[e] <==> h[c] + thymd[c]	Transport, Extracellular	0	0	0	0	1	0
THRabc	atp[c] + h2o[c] + thr-L[e] --> adp[c] + h[c] + pi[c] + thr-L[c]	Transport, Extracellular	0	0	0	0	1	0
THRAr	[c]thr-L <==> acald + gly	Threonine and Lysine Metabolism	0.7572	1	1	18	1	0.727
THRD	[c]nad + thr-L --> 2aobut + h + nadh	Glycine and Serine Metabolism	0.0571	0	0	18	1	0.136
THRD_L	[c]thr-L --> 2obut + nh4	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
THRS	[c]h2o + phom --> pi + thr-L	Threonine and Lysine Metabolism	0.6057	0	1	1	1	0.500
THRt2r	h[e] + thr-L[e] <==> h[c] + thr-L[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
THRt4	na1[e] + thr-L[e] --> na1[c] + thr-L[c]	Transport, Extracellular	0	0	0	0	0	0
THZPSN	[c]atp + cys-L + dxyl5p + tyr-L --> 4hba + 4mpetz + ala-L + amp + co2 + h + h2o + ppi	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
TKT1	[c]r5p + xu5p-D <==> g3p + s7p	Pentose Phosphate Cycle	1	1	1	0	1	1
TKT2	[c]e4p + xu5p-D <==> f6p + g3p	Pentose Phosphate Cycle	1	1	1	0	1	1

TMAOR1	[c]h + mql8 + tmao --> h2o + mqn8 + tma	Oxidative phosphorylation	0	0	0	0	0	0
TMAOR1e	h[e] + mql8[c] + tmao[e] --> h2o[e] + mqn8[c] + tma[e]	Oxidative phosphorylation	0	0	0	0	0	0
TMAOR2	[c]2dmmql8 + h + tmao --> 2dmmq8 + h2o + tma	Oxidative phosphorylation	0	0	0	0	0	0
TMAOR2e	2dmmql8[c] + h[e] + tmao[e] --> 2dmmq8[c] + h2o[e] + tma[e]	Oxidative phosphorylation	0	0	0	0	0	0
TMDK1	[c]atp + thymd --> adp + dtmp + h	Nucleotide Salvage Pathways	0	0	0	0	1	0
TMDPP	[c]pi + thymd <==> 2dr1p + thym	Nucleotide Salvage Pathways	0	0	0	0	0	0
TMDS	[c]dump + mlthf --> dhf + dtmp	Nucleotide Salvage Pathways	1	1	1	0	1	1
TMKr	[c]atp + thm <==> adp + h + thmmp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
TMPKr	[c]atp + thmmp <==> adp + thmpp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
TMPPP	[c]2mahmp + 4mpetz + h --> ppi + thmmp	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
TPI	[c]dhap <==> g3p	Glycolysis/Gluconeogenesis	1	1	1	0	1	1
TRDR	[c]h + nadph + trdox --> nadp + trdrd	Oxidative phosphorylation	1	1	1	0	1	1
TRE6PH	[c]h2o + tre6p --> g6p + glc-D	Alternate Carbon Metabolism	0.0096	0	0	2	1	0.011
TRE6PP	[c]h2o + tre6p --> pi + tre	Alternate Carbon Metabolism	0	0	0	0	1	0
TRE6PS	[c]g6p + udpg --> h + tre6p + udp	Alternate Carbon Metabolism	0	0	0	0	1	0
TREH	[c]h2o + tre --> (2) glc-D	Alternate Carbon Metabolism	0	0	0	0	1	0
TREHe	[e]h2o + tre --> (2) glc-D	Alternate Carbon Metabolism	0.0084	0	0	2	0.011	0.011
TREpts	pep[c] + tre[e] --> pyr[c] + tre6p[c]	Transport, Extracellular	0.0096	0	0	2	0.011	0.011
TRPAS1	[c]cys-L + h2o --> h2s + nh4 + pyr	Cysteine Metabolism	0	0	0	0	1	0
TRPAS2	[c]h2o + trp-L <==> indole + nh4 + pyr	Tyrosine, Tryptophan, and Phenylalanine Metabolism	0.9992	1	1	1	1	1
TRPS1	[c]3ig3p + ser-L --> g3p + h2o + trp-L	Tyrosine, Tryptophan, and Phenylalanine Metabolism	0.0010	0	0	1	1	0.011
TRPS2	[c]indole + ser-L --> h2o + trp-L	Tyrosine, Tryptophan, and Phenylalanine Metabolism	0.0014	0	0	1	1	0.011
TRPS3	[c]3ig3p --> g3p + indole	Tyrosine, Tryptophan, and Phenylalanine Metabolism	0.9902	1	1	1	1	0.989
TRPt2r	h[e] + trp-L[e] <==> h[c] + trp-L[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
TRSAR	[c]2h3oppan + h + nadh --> glyx-R + nad	Glyoxylate Metabolism	0.0995	0	0	24	1	0.250
TSULabc	atp[c] + h2o[c] + tsul[e] --> adp[c] + h[c] + pi[c] + tsul[c]	Transport, Extracellular	0	0	0	0	0	0
TTDCAt2	h[e] + ttdca[e] --> h[c] + ttdca[c]	Transport, Extracellular	0.0088	0	0	0	0.011	0.011
TYRt2r	h[e] + tyr-L[e] <==> h[c] + tyr-L[c]	Transport, Extracellular	0	0	0	0	1	0
TYRTA	[c]akg + tyr-L <==> 34hpp + glu-L	Tyrosine, Tryptophan, and Phenylalanine Metabolism	1	1	1	0	1	1
U23GAAT	[c]3hmrsACP + u3hga --> ACP + h + u23ga	Cell Envelope Biosynthesis	1	1	1	0	1	1
UAAGDS	[c]26dap-M + atp + uamag --> adp + h + pi + ugmd	Cell Envelope Biosynthesis	1	1	1	0	1	1
UACMAMO	[c]h2o + (2) nad + uacmam --> (3) h + (2) nadh + uacmamu	Cell Envelope Biosynthesis	0	0	0	0	0	0
UAG2Ei	[c]uacgam --> uacmam	Cell Envelope Biosynthesis	0	0	0	0	0	0
UAGAAT	[c]3hmrsACP + uacgam <==> ACP + u3aga	Cell Envelope Biosynthesis	1	1	1	0	1	1
UAGCVT	[c]pep + uacgam --> pi + uaccg	Cell Envelope Biosynthesis	1	1	1	0	1	1
UAGDP	[c]acgam1p + h + utp --> ppi + uacgam	Cell Envelope Biosynthesis	1	1	1	0	1	1
UAGPT3	[c]uacgam + uagmda --> h + uaaagmda + udp	Cell Envelope Biosynthesis	1	1	1	0	1	1
UAMAGS	[c]atp + glu-D + uama --> adp + h + pi + uamag	Cell Envelope Biosynthesis	1	1	1	0	1	1
UAMAS	[c]ala-L + atp + uamr --> adp + h + pi + uama	Cell Envelope Biosynthesis	1	1	1	0	1	1
UAPGR	[c]h + nadph + uaccg --> nadp + uamr	Cell Envelope Biosynthesis	1	1	1	0	1	1
UDCPDP	[c]h2o + udcppd --> h + pi + udcpp	Cell Envelope Biosynthesis	1	1	1	0	1	1
UDCPDPS	[c]frdp + (8) ipdp --> (8) ppi + udcppd	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
UDPG4E	[c]udpg <==> udpgal	Alternate Carbon Metabolism	0.0438	0	0	0	0.034	0.034
UDPGALM	[c]udpgal --> udpgalfur	Cell Envelope Biosynthesis	0	0	0	0	0	0
UDPGD	[c]h2o + (2) nad + udpg --> (3) h + (2) nadh + udpglcur	Cell Envelope Biosynthesis	0	0	0	0	0	0
UGLT	[c]gal1p + udpg <==> g1p + udpgal	Alternate Carbon Metabolism	0.0438	0	0	0	0.034	0.034
UGLYCH	[c](2) h + h2o + urdglyc --> co2 + glx + (2) nh4	Nitrogen	0	0	0	0	0	0
UGMDDS	[c]alaala + atp + ugmd --> adp + h + pi + ugmda	Cell Envelope Biosynthesis	1	1	1	0	1	1
UHGADA	[c]h2o + u3aga --> ac + u3hga	Cell Envelope Biosynthesis	1	1	1	0	1	1

UMPK	[c]atp + ump <==> adp + udp	Nucleotide Salvage Pathways	1	1	1	90	1	1
UNK3	[c]2kmb + glu-L --> akp + met-L	Arginine and Proline Metabolism	1	1	1	0	1	1
UPP3MT	[c](2) amet + uppg3 --> (2) ahcys + h + shcl	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
UPP3S	[c]hmbil --> h2o + uppg3	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
UPPDC1	[c](4) h + uppg3 --> (4) co2 + cpppg3	Cofactor and Prosthetic Group Biosynthesis	0	0	0	0	0	0
UPPRT	[c]prpp + ura --> ppi + ump	Nucleotide Salvage Pathways	0	0	0	0	1	0
URAt2	h[e] + ura[e] --> h[c] + ura[c]	Transport, Extracellular	0	0	0	0	0	0
URAt2r	h[e] + ura[e] <==> h[c] + ura[c]	Putative Transporters	0.0515	0	0	0	1	0.045
UREAt	urea[e] <==> urea[c]	Transport, Extracellular	0.0088	0	0	0	1	0.011
URIDK2r	[c]atp + dump <==> adp + dudp	Nucleotide Salvage Pathways	0.9435	1	1	90	1	0.943
URIK2	[c]gtp + uri --> gdp + h + ump	Nucleotide Salvage Pathways	0.2584	0.48	0.044	90	1	0.625
URIt2	h[e] + uri[e] --> h[c] + uri[c]	Transport, Extracellular	0	0	0	0	0	0
URIt2r	h[e] + uri[e] <==> h[c] + uri[c]	Transport, Extracellular	0.0140	0	0	0	1	0.011
USHD	[c]h2o + u23ga --> (2) h + lipidX + ump	Cell Envelope Biosynthesis	1	1	1	0	1	1
VALabc	atp[c] + h2o[c] + val-L[e] --> adp[c] + h[c] + pi[c] + val-L[c]	Transport, Extracellular	0	0	0	0	1	0
VALt2r	h[e] + val-L[e] <==> h[c] + val-L[c]	Transport, Extracellular	0	0	0	0	1	0
VALTA	[c]akg + val-L <==> 3mob + glu-L	Valine, leucine, and isoleucine metabolism	1	1	1	0	1	1
VPAMT	[c]3mob + ala-L --> pyr + val-L	Alanine and aspartate metabolism	0	0	0	0	0	0
X5PL3E	[c]xu5p-L --> ru5p-L	Alternate Carbon Metabolism	0	0	0	0	0	0
XANt	xan[e] <==> xan[c]	Transport, Extracellular	0.0673	0	0	0	1	0.080
XANt2	h[e] + xan[e] --> h[c] + xan[c]	Putative Transporters	0	0	0	0	1	0
XPPT	[c]prpp + xan --> ppi + xmp	Nucleotide Salvage Pathways	0.0111	0	0	0	1	0.011
XTSnt2r	h[e] + xtsn[e] <==> h[c] + xtsn[c]	Transport, Extracellular	0.0111	0	0	0	1	0.011
XYLabc	atp[c] + h2o[c] + xyl-D[e] --> adp[c] + h[c] + pi[c] + xyl-D[c]	Transport, Extracellular	0	0	0	0	0.011	0
XYLI1	[c]xyl-D <==> xylu-D	Alternate Carbon Metabolism	0.0151	0	0	0	0.011	0.011
XYLI2i	[c]fru --> glc-D	Alternate Carbon Metabolism	0.0166	0	0	0	0.011	0.011
XYLK	[c]atp + xylu-D --> adp + h + xu5p-D	Alternate Carbon Metabolism	0.0151	0	0	0	0.011	0.011
XYLt2	h[e] + xyl-D[e] --> h[c] + xyl-D[c]	Transport, Extracellular	0.0151	0	0	0	0.011	0.011