

SBML Model Report

Model name: “Smallbone2013 - E.coli metabolic model with linlog rate law”



May 5, 2016

1 General Overview

This is a document in SBML Level 2 Version 4 format. This model was created by the following three authors: Nick Juty¹, Vijayalakshmi Chelliah² and Kieran Smallbone³ at November 22nd 2011 at no o' clock in the morning. and last time modified at April fourth 2014 at 3:04 p. m. Table 1 shows an overview of the quantities of all components of this model.

Table 1: Number of components in this model, which are described in the following sections.

Element	Quantity	Element	Quantity
compartment types	0	compartments	2
species types	0	species	786
events	0	constraints	0
reactions	399	function definitions	1
global parameters	420	unit definitions	3
rules	0	initial assignments	0

2 Unit Definitions

This is an overview of seven unit definitions of which four are predefined by SBML and not mentioned in the model.

¹EMBL-EBI, juty@ebi.ac.uk

²EMBL-EBI, viji@ebi.ac.uk

³University of Manchester, kieran.smallbone@manchester.ac.uk

2.1 Unit substance

Name mmol

Definition mmol

2.2 Unit mM

Name mM

Definition $\text{mmol} \cdot \text{l}^{-1}$

2.3 Unit mM_per_s

Name mM per s

Definition $\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$

2.4 Unit volume

Notes Litre is the predefined SBML unit for volume.

Definition 1

2.5 Unit area

Notes Square metre is the predefined SBML unit for area since SBML Level 2 Version 1.

Definition m^2

2.6 Unit length

Notes Metre is the predefined SBML unit for length since SBML Level 2 Version 1.

Definition m

2.7 Unit time

Notes Second is the predefined SBML unit for time.

Definition s

3 Compartments

This model contains two compartments.

Table 2: Properties of all compartments.

Id	Name	SBO	Spatial	Size	Unit	Constant	Outside
			Dimensions				
cell	cell	0000290	3	1	litre	<input checked="" type="checkbox"/>	
extracellular	extracellular	0000290	3	1	litre	<input checked="" type="checkbox"/>	

3.1 Compartment cell

This is a three dimensional compartment with a constant size of one litre.

Name cell

SBO:0000290 physical compartment

3.2 Compartment extracellular

This is a three dimensional compartment with a constant size of one litre.

Name extracellular

SBO:0000290 physical compartment

4 Species

This model contains 786 species. The boundary condition of 384 of these species is set to true so that these species' amount cannot be changed by any reaction. Section 8 provides further details and the derived rates of change of each species.

Table 3: Properties of each species.

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_0003	(2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran	cell	mmol · l ⁻¹	☒	☒
s_0004	(2R,4S)-2-methyl-2,4-dihydroxydihydrofuran-3-one	cell	mmol · l ⁻¹	☒	☒
s_0017	(R)-2,3-Dihydroxy-3-methylbutanoate	cell	mmol · l ⁻¹	☐	☒
s_0018	(R)-2,3-Dihydroxy-3-methylpentanoate	cell	mmol · l ⁻¹	☐	☒
s_0028	(R)-3-Hydroxytetradecanoyl-[acyl-carrier protein]	cell	mmol · l ⁻¹	☐	☒
s_0029	(R)-Glycerate	cell	mmol · l ⁻¹	☐	☒
s_0032	(R)-Pantoate	cell	mmol · l ⁻¹	☐	☒
s_0033	(R)-Pantothenate	cell	mmol · l ⁻¹	☐	☒
s_0040	(S)-2-[5-Amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxamido]succinate	cell	mmol · l ⁻¹	☐	☒
s_0041	(S)-2-Aceto-2-hydroxybutanoate	cell	mmol · l ⁻¹	☐	☒
s_0042	(S)-2-Acetylacetate	cell	mmol · l ⁻¹	☐	☒
s_0043	(S)-3-Hydroxybutanoyl-CoA	cell	mmol · l ⁻¹	☐	☒
s_0044	(S)-3-Hydroxydecanoyl-CoA	cell	mmol · l ⁻¹	☐	☒
s_0045	(S)-3-Hydroxydodecanoyl-CoA	cell	mmol · l ⁻¹	☐	☒
s_0046	(S)-3-Hydroxyhexadecanoyl-CoA	cell	mmol · l ⁻¹	☐	☒
s_0047	(S)-3-Hydroxyhexanoyl-CoA	cell	mmol · l ⁻¹	☐	☒

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_0049	(S)-3-Hydroxyoctanoyl-CoA	cell	mmol·l ⁻¹	□	□
s_0050	(S)-3-Hydroxytetradecanoyl-CoA	cell	mmol·l ⁻¹	□	□
s_0051	(S)-3-Methyl-2-oxopentanoate	cell	mmol·l ⁻¹	□	□
s_0052	(S)-Dihydroorotate	cell	mmol·l ⁻¹	□	□
s_0073	1,2-dihexadec-9-enoyl-sn-glycerol phosphate	3-cell	mmol·l ⁻¹	□	□
s_0075	1,2-dihexadecanoyl-sn-glycerol phosphate	3-cell	mmol·l ⁻¹	□	□
s_0096	1-(2-Carboxyphenylamino)-1-deoxy-D-ribulose 5-phosphate	cell	mmol·l ⁻¹	□	□
s_0097	1-(5-Phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino]imidazole-4-carboxamide	cell	mmol·l ⁻¹	□	□
s_0098	1-(5-Phosphoribosyl)-AMP	cell	mmol·l ⁻¹	□	□
s_0099	1-(5-Phosphoribosyl)-ATP	cell	mmol·l ⁻¹	□	□
s_0116	1-deoxy-D-xylulose 5-phosphate	cell	mmol·l ⁻¹	□	□
s_0119	1-hexadec-9-enoyl-sn-glycerol phosphate	3-cell	mmol·l ⁻¹	□	□
s_0121	1-hexadecanoyl-sn-glycerol 3-phosphate	cell	mmol·l ⁻¹	□	□
s_0123	1-hydroxy-2-methyl-2-(E)-butenyl diphosphate	4-cell	mmol·l ⁻¹	□	□
s_0128	1-Pyrroline-5-carboxylate	cell	mmol·l ⁻¹	□	□
s_0133	10-Formyltetrahydrofolate	cell	mmol·l ⁻¹	□	□
s_0147	2,3,2'3'-Tetrakis(beta-hydroxymyristoyl)-D-glucosaminyl-1,6-beta-D-glucosamine 1,4'-bisphosphate	cell	mmol·l ⁻¹	□	□
s_0148	2,3,4,5-Tetrahydrodipicolinate	cell	mmol·l ⁻¹	□	□

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition	
s_0149	2,3-Bis(3-hydroxytetradecanoyl)-beta-D-glucosaminyl 1-phosphate	cell	mmol · l ⁻¹	☒	☒	
s_0155	2,3-Dihydrodipicolinate	cell	mmol · l ⁻¹	☒	☒	
s_0160	2,5-Diamino-6-(ribosylamino)-4-(3H)-pyrimidinone 5'-phosphate	cell	mmol · l ⁻¹	☒	☒	
s_0162	2-(Formamido)-N1-(5-phospho-D-ribosyl)acetamidine	cell	mmol · l ⁻¹	☒	☒	
s_0191	2-Amino-4-hydroxy-6-(erythro-1,2,3-trihydroxypropyl)dihydropteridine triphosphate	cell	mmol · l ⁻¹	☒	☒	
s_0193	2-C-methyl-D-erythritol cyclodiphosphate	2,4-	cell	mmol · l ⁻¹	☒	☒
s_0194	2-C-methyl-D-erythritol 4-phosphate	cell	mmol · l ⁻¹	☒	☒	
s_0195	2-Dehydro-3-deoxy-D-arabino-heptonate 7-phosphate	cell	mmol · l ⁻¹	☒	☒	
s_0201	2-Dehydro-3-deoxy-D-gluconate phosphate	6-	cell	mmol · l ⁻¹	☒	☒
s_0203	2-Dehydropantoate	cell	mmol · l ⁻¹	☒	☒	
s_0214	2-Hydroxy-3-oxopropanoate	cell	mmol · l ⁻¹	☒	☒	
s_0217	2-Isopropylmaleate	cell	mmol · l ⁻¹	☒	☒	
s_0218	2-Methyl-4-amino-5-hydroxymethylpyrimidine diphosphate	cell	mmol · l ⁻¹	☒	☒	
s_0226	2-Octaprenyl-6-hydroxyphenol	cell	mmol · l ⁻¹	☒	☒	
s_0229	2-Octaprenylphenol	cell	mmol · l ⁻¹	☒	☒	
s_0231	2-Oxo-3-hydroxy-4-phosphobutanoate	cell	mmol · l ⁻¹	☒	☒	
s_0232	2-Oxobutanoate	cell	mmol · l ⁻¹	☒	☒	
s_0233	2-Oxoglutarate	cell	mmol · l ⁻¹	☒	☒	

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_0237	2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	cell	mmol · l ⁻¹	☒	☒
s_0252	3'-Phosphoadenylyl sulfate	cell	mmol · l ⁻¹	☒	☒
s_0255	3,4-dihydroxy-2-butanone 4-phosphate	cell	mmol · l ⁻¹	☒	☒
s_0262	3-(4-Hydroxyphenyl)pyruvate	cell	mmol · l ⁻¹	☒	☒
s_0263	3-(Imidazol-4-yl)-2-oxopropyl phosphate	cell	mmol · l ⁻¹	☒	☒
s_0265	3-Carboxy-2-hydroxy-4-methylpentanoate	cell	mmol · l ⁻¹	☒	☒
s_0266	3-Carboxy-3-hydroxy-4-methylpentanoate	cell	mmol · l ⁻¹	☒	☒
s_0267	3-Carboxy-4-methyl-2-oxopentanoate	cell	mmol · l ⁻¹	☒	☒
s_0269	3-Dehydroquinate	cell	mmol · l ⁻¹	☒	☒
s_0270	3-Dehydroshikimate	cell	mmol · l ⁻¹	☒	☒
s_0271	3-Deoxy-D-manno-2-octulosonate	cell	mmol · l ⁻¹	☒	☒
s_0272	3-Deoxy-D-manno-octulosonate 8-phosphate	cell	mmol · l ⁻¹	☒	☒
s_0276	3-Hydroxyglutaryl-[acyl-carrier protein] methyl ester	cell	mmol · l ⁻¹	☒	☒
s_0277	3-Hydroxypimeloyl-[acyl-carrier protein] methyl ester	cell	mmol · l ⁻¹	☒	☒
s_0282	3-Methyl-2-oxobutanoate	cell	mmol · l ⁻¹	☒	☒
s_0283	3-Octaprenyl-4-hydroxybenzoate	cell	mmol · l ⁻¹	☒	☒
s_0289	3-Oxo-glutaryl-[acyl-carrier protein] methyl ester	cell	mmol · l ⁻¹	☒	☒
s_0290	3-Oxo-pimeloyl-[acyl-carrier protein] methyl ester	cell	mmol · l ⁻¹	☒	☒
s_0293	3-Oxodecanoyl-CoA	cell	mmol · l ⁻¹	☒	☒

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_0295	3-Oxododecanoyl-CoA	cell	mmol · l ⁻¹	□	□
s_0297	3-Oxohexadecanoyl-CoA	cell	mmol · l ⁻¹	□	□
s_0299	3-Oxohexanoyl-CoA	cell	mmol · l ⁻¹	□	□
s_0303	3-Oxoctanoyl-CoA	cell	mmol · l ⁻¹	□	□
s_0304	3-Oxotetradecanoyl-[acyl-carrier protein]	cell	mmol · l ⁻¹	□	□
s_0305	3-Oxitetradecanoyl-CoA	cell	mmol · l ⁻¹	□	□
s_0306	3-Phospho-D-glycerate	cell	mmol · l ⁻¹	□	□
s_0307	3-Phospho-D-glyceroyl phosphate	cell	mmol · l ⁻¹	□	□
s_0308	3-Phosphohydroxypyruvate	cell	mmol · l ⁻¹	□	□
s_0310	4,5-dihydroxy-2,3-pentanedione	cell	mmol · l ⁻¹	□	□
s_0311	4-(1-D-Ribitylamino)-5-aminouracil	cell	mmol · l ⁻¹	□	□
s_0312	4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	cell	mmol · l ⁻¹	□	□
s_0313	4-Amino-2-methyl-5-phosphomethylpyrimidine	cell	mmol · l ⁻¹	□	□
s_0316	4-amino-4-deoxychorismate	cell	mmol · l ⁻¹	□	□
s_0318	4-Aminobenzoate	cell	mmol · l ⁻¹	□	□
s_0325	4-Hydroxybenzoate	cell	mmol · l ⁻¹	□	□
s_0328	4-Methyl-2-oxopentanoate	cell	mmol · l ⁻¹	□	□
s_0330	4-Methyl-5-(2-phosphoethyl)-thiazole	cell	mmol · l ⁻¹	□	□
s_0331	4-Phospho-D-erythronate	cell	mmol · l ⁻¹	□	□
s_0332	4-Phospho-L-aspartate	cell	mmol · l ⁻¹	□	□
s_0333	5'-Deoxyadenosine	cell	mmol · l ⁻¹	□	□
s_0334	5'-deoxyribose	cell	mmol · l ⁻¹	□	□
s_0335	5,10-Methenyltetrahydrofolate	cell	mmol · l ⁻¹	□	□
s_0336	5,10-Methylenetetrahydrofolate	cell	mmol · l ⁻¹	□	□
s_0337	5,6,7,8-Tetrahydrofolate	cell	mmol · l ⁻¹	□	□

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_0341	5-[(5-phospho-1-deoxyribulos-1-ylamino)methylideneamino]-1-(5-phosphoribosyl)imidazole-4-carboxamide	cell	mmol · l ⁻¹	☒	☒
s_0342	5-amino-1-(5-phospho-D-ribosyl)imidazole	cell	mmol · l ⁻¹	☒	☒
s_0343	5-Amino-1-(5-Phospho-D-ribosyl)imidazole-4-carboxamide	cell	mmol · l ⁻¹	☒	☒
s_0344	5-amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxylate	cell	mmol · l ⁻¹	☒	☒
s_0345	5-Amino-4-oxopentanoate	cell	mmol · l ⁻¹	☒	☒
s_0346	5-Amino-6-(5'-phosphoribitylamino)uracil	cell	mmol · l ⁻¹	☒	☒
s_0347	5-Amino-6-(5'-phosphoribosylamino)uracil	cell	mmol · l ⁻¹	☒	☒
s_0352	5-Formamido-1-(5-phospho-D-ribosyl)imidazole-4-carboxamide	cell	mmol · l ⁻¹	☒	☒
s_0354	5-Methyltetrahydrofolate	cell	mmol · l ⁻¹	☒	☒
s_0359	5-O-(1-Carboxyvinyl)-3-phosphoshikimate	cell	mmol · l ⁻¹	☒	☒
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	cell	mmol · l ⁻¹	☒	☒
s_0361	5-Phospho-beta-D-ribosylamine	cell	mmol · l ⁻¹	☒	☒
s_0362	5-phosphoribosyl-5-carboxyaminoimidazole	cell	mmol · l ⁻¹	☒	☒
s_0364	6,7-Dimethyl-8-(1-D-ribityl)lumazine	cell	mmol · l ⁻¹	☒	☒
s_0367	6-hydroxymethyl dihydropterin	cell	mmol · l ⁻¹	☒	☒
s_0368	6-hydroxymethyl-dihydropterinophosphate	py-cell	mmol · l ⁻¹	☒	☒

	Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_0369		6-Phospho-D-gluconate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0370		6-phospho-D-glucono-1,5-lactone	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0371		7,8-Diaminononanoate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0372		7,8-Dihydrofolate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0376		8-Amino-7-oxononanoate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0377		[2Fe-1S] desulfurated iron-sulfur cluster	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0378		[2Fe-2S] iron-sulfur cluster	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0380		[4Fe-4S] iron-sulfur cluster	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0381		Acetaldehyde	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0384		Acetate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0391		Acetoacetyl-CoA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0393		Acetyl phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0395		Acetyl-CoA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0397		acyl carrier protein	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0405		Adenine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0408		Adenosine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0411		Adenosine 3',5'-bisphosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0412		Adenosine 5'-phosphosulfate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0420		adenylated molybdopterin	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0421		ADP	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0435		all-trans-Octaprenyl diphosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0445		alpha-D-Ribose 1-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0446		alpha-D-Ribose 5-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0451		Ammonium	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0453		Ammonium	extracellular	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
s_0454		AMP	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_0457		Anthranilate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_0467	ATP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0470	beta-Alanine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0474	Bicarbonate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0476	Biotin	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0479	bis-molybdenum cofactor	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0480	bis-molybdopterin guanine dinucleotide	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0481	bis-molybdopterin mono-guanine dinucleotide	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0488	Butanoyl-CoA	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0493	C'-(3-Indolyl)-glycerol 3-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0497	Calcium	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0499	Calcium	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
s_0502	Carbamoyl phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0510	CDP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0512	CDP-1,2-dihexadec-9-enoylglycerol	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0513	CDP-1,2-dihexadecanoylglycerol	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0520	Chloride	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0522	Chloride	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
s_0526	chorismate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0530	cis-Aconitate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0533	cis-hexadec-9-enoyl-[acyl-carrier protein] (n-C16:1)	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0536	Citrate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0539	CMP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0542	CMP-3-deoxy-D-manno-octulosonate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0543	CO2	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_0545	CO2	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

			Compartment	Derived Unit	Constant	Boundary Condition
	s_0546	Co2+	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0548	Co2+	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_0555	Coenzyme A	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0565	Coproporphyrinogen III	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0574	Crotonoyl-CoA	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0575	CTP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0579	Cu2+	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0581	Cu2+	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_0585	cyclic pyranopterin monophosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0599	D-4'-Phosphopantothenate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0600	D-Alanine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0603	D-Alanyl-D-alanine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0611	D-Arabinose 5-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0620	D-erythro-1-(Imidazol-4-yl)glycerol 3-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0621	D-Erythrose 4-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0622	D-Fructose	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0627	D-Fructose 6-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0653	D-Glucosamine 1-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0654	D-Glucosamine 6-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0657	D-Glucose	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0659	D-Glucose	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_0663	D-Glucose 6-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0671	D-Glutamate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0675	D-Glycerate 2-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0704	D-Ribulose 5-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_0721	D-Xylulose 5-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition	
s_0726	dATP	cell	mmol · l ⁻¹	□	□	
s_0731	dCTP	cell	mmol · l ⁻¹	□	□	
s_0732	Deamino-NAD+	cell	mmol · l ⁻¹	□	□	
s_0737	Decanoyl-CoA (n-C10:0CoA)	cell	mmol · l ⁻¹	□	□	
s_0738	dehydroglycine	cell	mmol · l ⁻¹	□	□	
s_0754	Dephospho-CoA	cell	mmol · l ⁻¹	□	□	
s_0755	Dethiobiotin	cell	mmol · l ⁻¹	□	□	
s_0760	dGTP	cell	mmol · l ⁻¹	□	□	
s_0765	Dihydronicopterin	cell	mmol · l ⁻¹	□	□	
s_0766	Dihydronicopterin monophosphate	cell	mmol · l ⁻¹	□	□	
s_0767	Dihydropteroate	cell	mmol · l ⁻¹	□	□	
s_0768	dihydrosirohydrochlorin	cell	mmol · l ⁻¹	□	□	
s_0772	Dihydroxyacetone phosphate	cell	mmol · l ⁻¹	□	□	
s_0779	Dimethylallyl diphosphate	cell	mmol · l ⁻¹	□	□	
s_0783	Diphosphate	cell	mmol · l ⁻¹	□	□	
s_0785	Dodecanoate (n-C12:0)	cell	mmol · l ⁻¹	□	□	
s_0789	Dodecanoyl-ACP (n-C12:0ACP)	cell	mmol · l ⁻¹	□	□	
s_0790	Dodecanoyl-CoA (n-C12:0CoA)	cell	mmol · l ⁻¹	□	□	
s_0795	dTDP	cell	mmol · l ⁻¹	□	□	
s_0802	dTMP	cell	mmol · l ⁻¹	□	□	
s_0805	dTTP	cell	mmol · l ⁻¹	□	□	
s_0807	dUMP	cell	mmol · l ⁻¹	□	□	
s_0810	dUTP	cell	mmol · l ⁻¹	□	□	
s_0812	Enoylglutaryl-[acyl-carrier methyl ester	protein]	cell	mmol · l ⁻¹	□	□
s_0813	Enoylpimeloyl-[acyl-carrier methyl ester	protein]	cell	mmol · l ⁻¹	□	□

	Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
	s_0826	Farnesyl diphosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0838	Fe2+	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0840	Fe2+	extracellular	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_0841	Fe3+	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0843	Fe3+	extracellular	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_0859	Flavin adenine dinucleotide oxidized	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0860	Flavin adenine dinucleotide reduced	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0861	Flavodoxin reduced	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0862	flavodoxin semi oxidized	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0863	FMN	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0867	Formate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0875	Fumarate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0896	GDP	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0903	Geranyl diphosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0910	Glutaryl-[acyl-carrier protein] methyl ester	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0913	Glyceraldehyde 3-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0920	Glycerol 3-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0929	Glycine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0936	Glycolaldehyde	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0937	Glycolate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0941	Glyoxylate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0942	GMP	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0945	GTP	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0971	Hexadecanoate (n-C16:0)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0976	Hexadecenoate (n-C16:1)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_0979	Hexadecenoyl-CoA (n-C16:1CoA)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_0984	Hexanoyl-CoA (n-C6:0CoA)	cell	mmol · l ⁻¹	□	□
s_0991	Hydrogen peroxide	cell	mmol · l ⁻¹	□	□
s_0994	Hydrogen sulfide	cell	mmol · l ⁻¹	□	□
s_0998	Hydroxymethylbilane	cell	mmol · l ⁻¹	□	□
s_1005	Iminoaspartate	cell	mmol · l ⁻¹	□	□
s_1006	IMP	cell	mmol · l ⁻¹	□	□
s_1009	Indole	cell	mmol · l ⁻¹	□	□
s_1017	IscS sulfur acceptor protein	cell	mmol · l ⁻¹	□	□
s_1018	IscS with bound sulfur	cell	mmol · l ⁻¹	□	□
s_1019	IscU scaffold protein	cell	mmol · l ⁻¹	□	□
s_1020	IscU with bound [2Fe-2S] cluster	cell	mmol · l ⁻¹	□	□
s_1021	IscU with bound [4Fe-4S] cluster	cell	mmol · l ⁻¹	□	□
s_1022	IscU with two bound [2Fe-2S] clusters	cell	mmol · l ⁻¹	□	□
s_1027	Isocitrate	cell	mmol · l ⁻¹	□	□
s_1028	Isopentenyl diphosphate	cell	mmol · l ⁻¹	□	□
s_1033	KDO(2)-lipid IV(A)	cell	mmol · l ⁻¹	□	□
s_1038	KDO-lipid IV(A)	cell	mmol · l ⁻¹	□	□
s_1040	L-2-Amino-3-oxobutanoate	cell	mmol · l ⁻¹	□	□
s_1041	L-Alanine	cell	mmol · l ⁻¹	□	□
s_1061	L-Arginine	cell	mmol · l ⁻¹	□	□
s_1068	L-Asparagine	cell	mmol · l ⁻¹	□	□
s_1072	L-Aspartate	cell	mmol · l ⁻¹	□	□
s_1075	L-Aspartate 4-semialdehyde	cell	mmol · l ⁻¹	□	□
s_1081	L-Citrulline	cell	mmol · l ⁻¹	□	□
s_1082	L-Cystathionine	cell	mmol · l ⁻¹	□	□
s_1083	L-Cysteine	cell	mmol · l ⁻¹	□	□
s_1095	L-Glutamate	cell	mmol · l ⁻¹	□	□

	Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
	s_1098	L-Glutamate 1-semialdehyde	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1099	L-Glutamate 5-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1100	L-Glutamate 5-semialdehyde	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1101	L-Glutamine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1105	L-Glutamyl-tRNA(Glu)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1106	L-Histidine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1109	L-Histidinol	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1110	L-Histidinol phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1112	L-Homocysteine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1113	L-Homoserine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1119	L-Isoleucine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1127	L-Leucine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1131	L-Lysine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1138	L-Malate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1141	L-Methionine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1151	L-Phenylalanine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1155	L-Proline	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1170	L-Serine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1179	L-Threonine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1185	L-Tryptophan	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1189	L-Tyrosine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1193	L-Valine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1204	Lipid A Disaccharide	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1211	LL-2,6-Diaminoheptanedioate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1212	magnesium	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1214	magnesium	extracellular	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_1216	Malonyl-[acyl-carrier protein]	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_1217	Malonyl-CoA	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1218	malonyl-CoA methyl ester	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1239	Menaquinol 8	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1240	Menaquinone 8	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1242	meso-2,6-Diaminoheptanedioate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1248	Methanol	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1250	Methanol	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
s_1255	Mn2+	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1257	Mn2+	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
s_1258	MoaD Protein with bound AMP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1259	MoaD Protein with carboxylate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1260	MoaD Protein with thiocarboxylate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1261	Molybdate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1263	Molybdate	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
s_1264	molybdenum cofactor	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1265	molybdopterin	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1274	N(omega)-(L-Arginino)succinate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1277	N-((R)-4-Phosphopantethenoyl)-L-cysteine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1278	N-(5-Phospho-D-ribosyl)anthranilate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1287	N-Acetyl-D-glucosamine 1-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1302	N-Acetyl-L-glutamate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1303	N-Acetyl-L-glutamate 5-semialdehyde	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1304	N-Acetyl-L-glutamyl 5-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1312	N-Carbamoyl-L-aspartate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1315	N-Succinyl-2-L-amino-6-oxoheptanedioate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>

	Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
	s_1316	N-Succinyl-LL-2,6-diaminoheptanedioate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1318	N1-(5-Phospho-D-ribosyl)glycinamide	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1321	N2-Acetyl-L-ornithine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1322	N2-Formyl-N1-(5-phospho-D-ribosyl)glycinamide	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1327	N6-(1,2-Dicarboxyethyl)-AMP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1329	nickel	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1331	nickel	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_1333	Nicotinamide adenine dinucleotide	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1334	Nicotinamide adenine dinucleotide - reduced	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1335	Nicotinamide adenine dinucleotide phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1340	Nicotinate D-ribonucleotide	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1358	O-Acetyl-L-serine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1362	O-Phospho-4-hydroxy-L-threonine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1363	O-Phospho-L-homoserine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1364	O-Phospho-L-serine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1367	O-Succinyl-L-homoserine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1372	O2	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1374	O2	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_1390	Octanoyl-CoA (n-C8:0CoA)	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1391	Ornithine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1394	Orotate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1397	Orotidine 5'-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_1399	Oxaloacetate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1406	Oxidized thioredoxin	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1407	p-Cresol	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1411	Palmitoyl-ACP (n-C16:0ACP)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1412	Palmitoyl-CoA (n-C16:0CoA)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1413	Pantetheine 4'-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1429	Phenylpyruvate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1430	Phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1432	Phosphate	extracellular	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
s_1435	phosphatidylethanolamine (dihexadec-9enoyl, n-C16:1)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1437	phosphatidylethanolamine (dihexadecanoyl, n-C16:0)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1476	phosphatidylserine (dihexadec-9-enoyl, n-C16:1)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1477	phosphatidylserine (dihexadecanoyl, n-C16:0)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1484	Phosphoenolpyruvate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1491	Pimeloyl-[acyl-carrier protein]	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1492	Pimeloyl-[acyl-carrier protein] methyl ester	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1493	Porphobilinogen	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1494	potassium	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1496	potassium	extracellular	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
s_1497	Prephenate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1508	Protoheme	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
s_1511	Protoporphyrin	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>

	Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
	s_1512	Protoporphyrinogen IX	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1522	Pyridoxal 5'-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1530	Pyridoxine 5'-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1531	Pyruvate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1537	Quinolinate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1544	Reduced thioredoxin	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1546	Riboflavin	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1550	S-Adenosyl-4-methylthio-2-oxobutanoate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1551	S-Adenosyl-L-homocysteine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1552	S-Adenosyl-L-methionine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1558	S-Ribosyl-L-homocysteine	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1561	Sedoheptulose 7-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1571	Shikimate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1574	Shikimate 5-phosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1577	Siroheme	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1578	sirohydrochlorin	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1595	Succinate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1599	Succinyl-CoA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1609	Sulfate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1611	Sulfate	extracellular	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_1612	Sulfite	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1632	Tetradecanoyl-CoA (n-C14:0CoA)	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1643	Thiamin monophosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1644	Thiamine diphosphate	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1668	trans-Dec-2-enoyl-CoA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1670	trans-Dodec-2-enoyl-CoA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
	s_1672	trans-Hex-2-enoyl-CoA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s_1674	trans-Hexadec-2-enoyl-CoA	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1676	trans-Oct-2-enoyl-CoA	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1680	trans-Tetradec-2-enoyl-CoA	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1690	tRNA (Glu)	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1719	two disacharide linked murein units, pentapeptide crosslinked tetrapeptide (A2pm->D-alal) (middle of chain)	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1725	two linked disacharide pentapeptide murein units (uncrosslinked, middle of chain)	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1731	Ubiquinol-8	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1732	Ubiquinone-8	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1733	UDP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1734	UDP-2,3-bis(3-hydroxytetradecanoyl)glucosamine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1735	UDP-3-O-(3-hydroxytetradecanoyl)-D-glucosamine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1736	UDP-3-O-(3-hydroxytetradecanoyl)-N-acetylglucosamine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1742	UDP-N-acetyl-3-O-(1-carboxyvinyl)-D-glucosamine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1745	UDP-N-acetyl-D-glucosamine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1750	UDP-N-acetylmuramate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1751	UDP-N-acetylmuramoyl-L-alanine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
s_1752	UDP-N-acetylmuramoyl-L-alanyl-D-gamma-glutamyl-meso-2,6-diaminopimelate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>

	Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
	s_1754	UDP-N-acetylmuramoyl-L-alanyl-D-glutamate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1755	UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1762	UMP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1765	Undecaprenyl diphosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1768	Undecaprenyl phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1776	Undecaprenyl-diphospho-N-acetylmuramoyl-(N-acetylglucosamine)-L-ala-D-glu-meso-2,6-diaminopimeloyl-D-ala-D-ala	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1777	Undecaprenyl-diphospho-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1791	Uroporphyrinogen III	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1792	UTP	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1799	Xanthosine 5'-phosphate	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1804	Zinc	cell	mmol · l ⁻¹	<input type="checkbox"/>	<input type="checkbox"/>
	s_1806	Zinc	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_1807	(2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_1835	5'-deoxyribose	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_2072	p-Cresol	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	s_2093	S-Adenosyl-4-methylthio-2-oxobutanoate	extracellular	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0001	thrA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0002	thrB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0003	thrC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0005	talB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0006	mog	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0008	ribF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0010	ispH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0012	dapB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0020	folA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0022	pdxA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0030	leuD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0031	leuC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0032	leuB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0033	leuA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0034	ilvI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0035	ilvH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0036	ftsI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0037	murE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0038	murF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0039	mraY	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0040	murD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0041	murG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0042	murC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0043	ddlB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0044	lpxC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0045	mutT	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0046	coaE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0048	nadC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0051	aceE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0052	aceF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0053	lpdA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0054	acnB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0060	can	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0061	panD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0062	panC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0063	panB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0064	folK	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0065	mrcB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0071	hemL	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0074	mtnN	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0076	dapD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0077	pyrH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0078	dxr	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0079	uppS	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0080	cdsA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0081	lpxD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0082	fabZ	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0083	lpxA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0084	lpxB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0085	accA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0094	fadE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0099	proB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0100	proA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0103	argF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0110	yahI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0116	cynT	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0125	mhpF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0134	hemB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0135	ddlA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0137	proc	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0138	aroL	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0139	mak	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0144	ribD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0145	ribH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0146	thiL	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0149	dxs	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0150	ispA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0151	thiL	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0152	panE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0162	tesB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0167	adk	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0168	hemH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0175	gcl	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0177	glxR	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0183	arcC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0184	purK	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0185	pure	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0186	lpxH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0188	fold	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0221	mrdA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0223	nadD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0225	hscC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0238	fldA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0246	gltA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0253	sucC	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0254	sucD	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0260	nadA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0263	aroG	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0264	gpmA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0273	pgl	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0274	bioA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0275	bioB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0276	bioF	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0277	bioc	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0278	bioD1	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0279	moaA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0280	moaC	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0281	moaD	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0282	moaE	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0291	moeB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0292	moeA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0300	ybjG	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0313	ltaE	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0318	trxB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0323	pflA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0324	pflB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0326	serC	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0327	aroA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0328	cmk	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0330	lpxK	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0331	kdsB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0332	aspC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0342	pyrD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0368	pyrC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0372	fabH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0373	fabD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0374	fabG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0375	acpP	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0376	fabF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0377	pabC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0378	tmk	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0389	purB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0391	icd	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0395	dadX	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0403	prs	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0404	ispE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0405	hemA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0406	kdsA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0416	adhE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0425	trpA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0426	trpB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0427	trpC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0428	trpD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0429	trpE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0431	acnA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0432	ribA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0433	pgpB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0435	pyrF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0436	fabI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0439	puuA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0451	ydbK	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0466	aldA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0514	folM	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0515	fumC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0516	fumA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0519	malY	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0531	ribE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0540	ydiB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0541	aroD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0544	aroH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0554	nadE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0559	astC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0561	gdhA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0567	gapA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0572	pabB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0577	purT	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0578	eda	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0579	edd	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0580	zwf	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0586	nudB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0605	hisG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0606	hisD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0607	hisC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0608	hisB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0609	hisH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0610	hisA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0611	hisF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0612	hisI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0641	thiD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0657	folE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0682	atoB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0691	nudI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0717	yfbQ	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0719	ackA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0720	pta	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0727	ubiX	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0728	purF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0729	folC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0730	accD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0731	pdxB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0732	fabB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0734	aroC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0735	fadJ	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0736	fadI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0742	yfdZ	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0743	glk	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0746	gltX	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0750	cysK	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0757	cysM	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0765	hemF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

	Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
	e_0768	eutD	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0770	talA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0771	tktB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0774	dapE	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0775	purC	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0776	dapA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0791	purM	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0793	ppk	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0795	guaA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0796	guaB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0798	ispG	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0799	ndk	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0803	iscA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0804	nifU	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0805	iscS	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0813	glyA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0815	purL	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0818	pdxJ	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0819	nadB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0821	grcA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0822	trxC	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0823	pssA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0825	pheA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0826	tyrA	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0827	aroF	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0828	ppnK	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	e_0839	luxS	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0848	gutQ	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0866	ispF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0867	ispD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0868	cysC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0869	cysN	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0870	cysD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0871	cysH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0872	cysI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0873	cysJ	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0875	eno	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0876	pyrG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0893	argA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0894	thyA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0896	aas	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0897	lysA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0903	yqeA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0911	fldB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0918	serA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0919	rpiA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0925	pgk	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0926	epd	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0928	tktA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0931	metK	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0941	glcD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0951	metC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0953	plsC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0960	ribB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_0962	uppP	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0964	folB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0974	tdcE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0975	tdcD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0977	tdcB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0978	garK	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0979	garR	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0986	argG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0987	glmM	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0988	folP	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0990	ispB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0991	murA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0993	kdsD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_0994	kdsC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1004	mdh	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1005	accB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1006	accC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1010	aroE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1014	argD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1015	pabA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1019	cysG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1023	yhfW	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1026	rpe	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1027	aroB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1028	aroK	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1029	mrcA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1034	bioH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_1045	asd	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1086	xylA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1105	cysE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1106	gpsA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1108	gpmI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1109	tdh	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1110	tbl	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1125	waaA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1126	coaD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1127	coaBC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1128	dut	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1129	pyrE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1130	gmk	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1136	ilvN	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1137	ilvB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1141	tnaA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1149	glmS	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1150	glmU	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1160	asnA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1167	ilvE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1168	ilvD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1169	ilvA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1170	ilvC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1172	trxA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1184	hemX	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1185	hemD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1186	hemC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_1188	cyaY	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1189	dapF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1196	metE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1200	ubiD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1201	fre	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1202	fadA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1203	fadB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1205	hemG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1206	mobB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1207	mobA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1210	glnA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1226	tpiA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1227	fpr	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1232	metB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1233	metL	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1234	metF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1238	pflD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1239	pflC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1240	ppc	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1241	argE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1242	argC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1243	argB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1244	argH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1247	murI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1248	murB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1249	coaA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1250	thiH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_1251	thiG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1252	thiF	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1253	thiE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1254	thiC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1256	hemE	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1257	purD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1258	purH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1259	metA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1262	metH	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1263	lysC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1264	pgi	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1271	ubiC	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1272	ubiA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1273	plsB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1275	alr	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1276	tyrB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1277	aphA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1291	rpiB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1298	fumB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1312	psd	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1313	rsgA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1315	purA	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1326	cysQ	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1334	nrdG	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1335	nrdD	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1339	pyrI	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1340	pyrB	cell	mmol · l ⁻¹	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
e_1341	argI	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1355	sgcE	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1366	deoB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1367	deoD	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1369	serB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1373	gpmB	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1374	thiS	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1376	glcF	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
e_1377	glcE	cell	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

5 Parameters

This model contains 420 global parameters.

Table 4: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
	zero_flux		0.0	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ic0003			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0004			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0017			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0018			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0028			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0029			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0032			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0033			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0040			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0041			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0042			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0043			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0044			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0045			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0046			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0047			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0049			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0050			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0051			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0052			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0073			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0075			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0096			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0097			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0098			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0099			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0116			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0119			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0121			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0123			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0128			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0133			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0147			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0148			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0149			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0155			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic0160			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0162			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0191			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0193			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0194			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0195			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0201			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0203			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0214			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0217			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0218			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0226			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0229			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0231			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0232			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0233			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0237			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0252			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0255			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0262			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0263			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0265			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0266			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0267			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0269			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0270			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0271			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0272			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0276			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0277			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0282			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0283			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0289			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0290			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0293			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0295			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0297			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0299			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0303			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0304			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0305			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0306			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic0307			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0308			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0310			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0311			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0312			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0313			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0316			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0318			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0325			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0328			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0330			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0331			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0332			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0333			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0334			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0335			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0336			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0337			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0341			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0342			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0343			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0344			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0345			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0346			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0347			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0352			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0354			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0359			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0360			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0361			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0362			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0364			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0367			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0368			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0369			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0370			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0371			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0372			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0376			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0377			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0378			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0380			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic0381			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0384			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0391			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0393			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0395			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0397			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0405			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0408			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0411			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0412			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0420			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0421			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0435			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0445			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0446			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0451			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0453			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0454			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0457			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0467			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0470			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0474			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0476			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0479			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0480			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0481			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0488			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0493			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0497			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0499			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0502			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0510			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0512			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0513			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0520			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0522			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0526			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0530			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0533			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0536			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0539			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0542			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic0543			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0546			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0548			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0555			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0565			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0574			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0575			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0579			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0581			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0585			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0599			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0600			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0603			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0611			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0620			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0621			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0622			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0627			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0653			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0654			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0657			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0659			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0663			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0671			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0675			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0704			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0721			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0726			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0731			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0732			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0737			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0738			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0754			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0755			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0760			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0765			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0766			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0767			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0768			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0772			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0779			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0783			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic0785			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0789			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0790			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0795			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0802			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0805			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0807			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0810			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0812			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0813			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0826			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0838			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0840			1.0	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0841			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0843			1.0	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0859			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0860			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0861			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0862			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0863			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0867			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0875			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0896			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0903			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0910			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0913			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0920			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0929			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0936			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0937			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0941			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0942			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0945			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0971			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0976			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0979			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0984			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0991			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0994			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic0998			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1005			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1006			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic1009			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1017			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1018			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1019			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1020			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1021			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1022			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1027			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1028			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1033			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1038			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1040			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1041			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1061			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1068			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1072			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1075			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1081			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1082			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1083			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1095			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1098			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1099			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1100			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1101			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1105			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1106			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1109			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1110			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1112			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1113			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1119			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1127			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1131			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1138			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1141			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1151			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1155			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1170			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1179			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1185			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1189			0.1	$\text{mmol}\cdot\text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic1193			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1204			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1211			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1212			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1214			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1216			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1217			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1218			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1239			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1240			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1242			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1248			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1255			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1257			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1258			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1259			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1260			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1261			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1263			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1264			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1265			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1274			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1277			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1278			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1287			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1302			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1303			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1304			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1312			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1315			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1316			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1318			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1321			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1322			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1327			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1329			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1331			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1333			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1334			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1335			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1336			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1340			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic1358			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1362			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1363			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1364			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1367			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1372			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1374			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1390			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1391			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1394			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1397			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1399			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1406			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1407			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1411			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1412			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1413			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1429			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1430			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1432			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1435			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1437			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1476			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1477			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1484			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1491			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1492			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1493			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1494			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1496			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1497			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1508			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1511			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1512			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1522			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1530			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1531			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1537			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1544			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1546			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1550			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1551			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic1552			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1558			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1561			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1571			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1574			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1577			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1578			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1595			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1599			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1609			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1611			1.0	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1612			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1632			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1643			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1644			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1668			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1670			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1672			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1674			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1676			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1680			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1690			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1719			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1725			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1731			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1732			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1733			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1734			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1735			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1736			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1742			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1745			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1750			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1751			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1752			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1754			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1755			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1762			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1765			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1768			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1776			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>
ic1777			0.1	$\text{mmol} \cdot \text{l}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ic1791			0.1	mmol·l ⁻¹	<input checked="" type="checkbox"/>
ic1792			0.1	mmol·l ⁻¹	<input checked="" type="checkbox"/>
ic1799			0.1	mmol·l ⁻¹	<input checked="" type="checkbox"/>
ic1804			0.1	mmol·l ⁻¹	<input checked="" type="checkbox"/>
ic1806			1.0	mmol·l ⁻¹	<input checked="" type="checkbox"/>

6 Function definition

This is an overview of one function definition.

6.1 Function definition \max

Arguments x, y

Mathematical Expression

$$\frac{x + y + |x - y|}{2} \quad (1)$$

7 Reactions

This model contains 399 reactions. All reactions are listed in the following table and are subsequently described in detail. If a reaction is affected by a modifier, the identifier of this species is written above the reaction arrow.

Table 5: Overview of all reactions

Nº	Id	Name	Reaction Equation	SBO
1	r_0001	(2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran (spontaneous)	s_0004 $\xrightleftharpoons{\quad}$ s_0003	0000176
2	r_0008	1-(5-phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino)imidazole-4-carboxamide isomerase	s_0097 $\xrightleftharpoons{e_0610, s_0097, s_0341}$ s_0341	0000176
3	r_0009	1-deoxy-D-xylulose 5-phosphate synthase	s_0913+s_1531 $\xrightleftharpoons{e_0149, s_0913, s_1531, s_0543, s_0116}$	0000543 + s_0116
4	r_0011	1-deoxy-D-xylulose reductoisomerase	s_0116+s_1336 $\xrightleftharpoons{e_0078, s_0116, s_1336, s_0194, s_1335}$	00001764 + s_1335
5	r_0012	1-hexadec-7-enoyl-sn-glycerol 3-phosphate O-acyltransferase (n-C16:1)	s_0119+s_0533 $\xrightleftharpoons{e_0953, s_0119, s_0533, s_0397, s_0073}$	0000397 + s_0073
6	r_0013	1-hexadecanoyl-sn-glycerol 3-phosphate O-acyltransferase (n-C16:0)	s_0121+s_1411 $\xrightleftharpoons{e_0953, s_0121, s_1411, s_0397, s_0075}$	0000397 + s_0075
7	r_0014	1-hydroxy-2-methyl-2-(E)-butenyl diphosphate reductase (dmpp)	4- s_0123+s_1334 $\xrightleftharpoons{e_0010, s_0123, s_1334, s_0779, s_1333}$	0000769 + s_1333
8	r_0015	1-hydroxy-2-methyl-2-(E)-butenyl diphosphate reductase (ipdp)	4- s_0123+s_1334 $\xrightleftharpoons{e_0010, s_0123, s_1334, s_1028, s_1333}$	0001028 + s_1333

Nº	Id	Name		Reaction Equation	SBO
9	r_0038	2-aceto-2-hydroxybutanoate synthase		s_0232 + s_1531 $\xrightleftharpoons[e_{1137}, e_{0034}, e_{0035}, e_{1136}, s_{0232}, s_{1531}, s_{0041}, s_{0543}]{0000176}$ s_0543	
10	r_0053	2-C-methyl-D-erythritol cyclodiphosphate synthase	2,4-	s_0237 $\xrightleftharpoons[e_{0866}, s_{0237}, s_{0193}, s_{0539}]{0000176}$ s_0193 + s_0539	
11	r_0054	2-C-methyl-D-erythritol 4-phosphate cytidyltransferase		s_0194 + s_0575 $\xrightleftharpoons[e_{0867}, s_{0194}, s_{0575}, s_{0312}, s_{0783}]{0000376}$ s_0783	
12	r_0056	2-dehydro-3-deoxy-phosphogluconate dolase	al-	s_0201 $\xrightleftharpoons[e_{0578}, s_{0201}, s_{0913}, s_{1531}]{0000176}$ s_0913 + s_1531	
13	r_0063	2-dehydropantoate 2-reductase		s_0203 + s_1336 $\xrightleftharpoons[e_{0152}, e_{1170}, s_{0203}, s_{1336}, s_{1335}, s_{0032}]{0000176}$ s_1335 + s_0032	
14	r_0066	2-isopropylmalate hydratase		s_0266 $\xrightleftharpoons[e_{0031}, e_{0030}, s_{0266}, s_{0217}]{0000176}$ s_0217	0000176
15	r_0067	2-isopropylmalate synthase		s_0282 + s_0395 $\xrightleftharpoons[e_{0033}, s_{0282}, s_{0395}, s_{0266}, s_{0555}]{0000266}$ s_0555	0000266 +
16	r_0078	2-Oxo-4-methyl-3-carboxypentanoate decarboxylation		s_0267 $\xrightleftharpoons[s_{0328}, s_{0543}]{0000176}$ s_0328 + s_0543	0000176
17	r_0084	2C-methyl-D-erythritol 2,4 cyclodiphosphate dehydratase		s_0193 + 2 s_0861 $\xrightleftharpoons[e_{0238}, e_{0798}, e_{0911}, s_{0193}, s_{0861}, s_{0862}, s_{0123}]{0000176}$ 2 s_0862 + s_0123	
18	r_0085	3',5'-bisphosphate nucleotidase		s_0411 $\xrightleftharpoons[e_{1326}, s_{0411}, s_{0454}, s_{1430}]{0000176}$ s_0454 + s_1430	0000176
19	r_0092	3,4-Dihydroxy-2-butanone-4-phosphate synthase		s_0704 $\xrightleftharpoons[e_{0960}, s_{0704}, s_{0255}, s_{0867}]{0000176}$ s_0255 + s_0867	0000176
20	r_0096	3-cis-2-trans-enoyl-CoA isomerase		s_1674 $\xrightleftharpoons[e_{1203}, s_{1674}, s_{0979}]{0000176}$ s_0979	0000176

Nº	Id	Name	Reaction Equation	SBO
21	r_0098	3-dehydroquinate dehydratase, irreversible	s_0269 $\xrightleftharpoons[e_0541, s_0269, s_0270]{}$ s_0270	0000176
22	r_0099	3-dehydroquinate synthase	s_0195 $\xrightleftharpoons[s_1430]{e_1027, s_0195, s_0269, s_1430}$ s_0269 + s_1430	0000176
23	r_0100	3-deoxy-D-manno-octulosonic acid 8-phosphate synthase	s_0611 + s_1484 $\xrightleftharpoons[e_0406, s_0611, s_1484, s_0272, s_1430]{}$ 00002762 + s_1430	
24	r_0101	3-deoxy-D-arabino-heptulosonate 7-phosphate synthetase	s_0621 + s_1484 $\xrightleftharpoons[e_0544, e_0827, e_0263, s_0621, s_1484, s_0195, s_1430]{}$ 0000176 s_0195 + s_1430	
25	r_0102	3-deoxy-D-manno-octulosonic acid transferase	s_0542 + s_0147 $\xrightleftharpoons[e_1125, s_0542, s_0147, s_0539, s_1038]{}$ 00005769 + s_1038	
26	r_0103	3-deoxy-D-manno-octulosonic acid transferase	s_0542 + s_1038 $\xrightleftharpoons[e_1125, s_0542, s_1038, s_0539, s_1033]{}$ 00005769 + s_1033	
27	r_0105	3-deoxy-manno-octulosonate cytidylyltransferase	s_0575 + s_0271 $\xrightleftharpoons[e_0331, s_0575, s_0271, s_0542, s_0783]{}$ 00005762 + s_0783	
28	r_0106	3-deoxy-manno-octulosonate-8-phosphatase	s_0272 $\xrightleftharpoons[e_0994, s_0272, s_0271, s_1430]{}$ s_0271 + 0000176 s_1430	
29	r_0120	3-hydroxyacyl-CoA dehydratase (3-hydroxybutanoyl-CoA)	(3- s_0043 $\xrightleftharpoons[e_1203, e_0735, s_0043, s_0574]{}$ s_0574	0000176
30	r_0121	3-hydroxyacyl-CoA dehydratase (3-hydroxydecanoyl-CoA)	(3- s_0044 $\xrightleftharpoons[e_1203, e_0735, s_0044, s_1668]{}$ s_1668	0000176
31	r_0122	3-hydroxyacyl-CoA dehydratase (3-hydroxdodecanoyl-CoA)	(3- s_0045 $\xrightleftharpoons[e_1203, e_0735, s_0045, s_1670]{}$ s_1670	0000176
32	r_0123	3-hydroxyacyl-CoA dehydratase (3-hydroxyhexadecanoyl-CoA)	(3- s_0046 $\xrightleftharpoons[e_1203, e_0735, s_0046, s_1674]{}$ s_1674	0000176

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33	r_0124	3-hydroxyacyl-CoA dehydratase hydroxyhexanoyl-CoA)	(3-	s_0047 $\xrightleftharpoons[e_1203, e_0735, s_0047]{s_1672}$ s_1672	0000176
34	r_0126	3-hydroxyacyl-CoA dehydratase hydroxyoctanoyl-CoA)	(3-	s_0049 $\xrightleftharpoons[e_1203, e_0735, s_0049, s_1676]{s_1676}$ s_1676	0000176
35	r_0127	3-hydroxyacyl-CoA dehydratase hydroxytetradecanoyl-CoA)	(3-	s_0050 $\xrightleftharpoons[e_1203, e_0735, s_0050, s_1680]{s_1680}$ s_1680	0000176
36	r_0128	3-hydroxyacyl-CoA dehydrogenase oxodecanoyl-CoA)	(3-	s_0293+s_1334 $\xrightleftharpoons[e_1203, e_0735, s_0293, s_1334, s_0044, s_1333]{0000176}$ s_0044 + s_1333	0000176
37	r_0129	3-hydroxyacyl-CoA dehydrogenase oxododecanoyl-CoA)	(3-	s_0295+s_1334 $\xrightleftharpoons[e_1203, e_0735, s_0295, s_1334, s_0045, s_1333]{0000176}$ s_0045 + s_1333	0000176
38	r_0130	3-hydroxyacyl-CoA dehydrogenase oxohexadecanoyl-CoA)	(3-	s_0297+s_1334 $\xrightleftharpoons[e_1203, e_0735, s_0297, s_1334, s_0046, s_1333]{0000176}$ s_0046 + s_1333	0000176
39	r_0131	3-hydroxyacyl-CoA dehydrogenase oxohexanoyl-CoA)	(3-	s_0299+s_1334 $\xrightleftharpoons[e_1203, e_0735, s_0299, s_1334, s_0047, s_1333]{0000176}$ s_0047 + s_1333	0000176
40	r_0133	3-hydroxyacyl-CoA dehydrogenase oxooctanoyl-CoA)	(3-	s_0303+s_1334 $\xrightleftharpoons[e_1203, e_0735, s_0303, s_1334, s_0049, s_1333]{0000176}$ s_0049 + s_1333	0000176
41	r_0134	3-hydroxyacyl-CoA dehydrogenase oxotetradecanoyl-CoA)	(3-	s_0305+s_1334 $\xrightleftharpoons[e_1203, e_0735, s_0305, s_1334, s_0050, s_1333]{0000176}$ s_0050 + s_1333	0000176
42	r_0135	3-hydroxyacyl-CoA dehydrogenase (acetoacetyl-CoA)		s_0391+s_1334 $\xrightleftharpoons[e_1203, e_0735, s_0391, s_1334, s_0043, s_1333]{0000176}$ s_0043 + s_1333	0000176
43	r_0138	3-isopropylmalate dehydratase		s_0217 $\xrightleftharpoons[e_0031, e_0030, s_0217, s_0265]{s_0265}$ s_0265	0000176
44	r_0139	3-isopropylmalate dehydrogenase		s_0265+s_1333 $\xrightleftharpoons[e_0032, s_0265, s_1333, s_0267, s_1334]{0000267+}$ s_1334	0000267+

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45	r_0143	3-methyl-2-oxobutanoate hydroxymethyl-transferase	s_0282 + s_0336 $\xrightleftharpoons[e_0063, s_0282, s_0336, s_0203, s_0337]{}$ s_0337	00000263 +
46	r_0145	3-Oxo-glutaryl-[ACP] methyl ester dehydratase	s_0276 $\xrightleftharpoons[e_0082, s_0276, s_0812]{}$ s_0812	0000176
47	r_0146	3-Oxo-glutaryl-[ACP] methyl ester reductase	s_1336 + s_0289 $\xrightleftharpoons[e_0374, s_1336, s_0289, s_0276, s_1335]{}$ s_1335	00002766 +
48	r_0147	3-Oxo-glutaryl-[ACP] methyl ester synthase	s_1216 + s_1218 $\xrightleftharpoons[e_0372, s_1216, s_1218, s_0543, s_0555, s_0289]{}$ s_0543 + s_0555 + s_0289	0000176
49	r_0148	3-Oxo-pimeloyl-[ACP] methyl ester dehydratase	s_0277 $\xrightleftharpoons[e_0082, s_0277, s_0813]{}$ s_0813	0000176
50	r_0149	3-Oxo-pimeloyl-[ACP] methyl ester reductase	s_1336 + s_0290 $\xrightleftharpoons[e_0374, s_1336, s_0290, s_0277, s_1335]{}$ s_1335	00002777 +
51	r_0150	3-Oxo-pimeloyl-[ACP] methyl ester synthase	s_0910 + s_1216 $\xrightleftharpoons[e_0732, s_0910, s_1216, s_0397, s_0543, s_0290]{}$ s_0397 + s_0543 + s_0290	0000176
52	r_0154	3-oxoacyl-[acyl-carrier-protein] reductase (n-C14:0)	s_0304 + s_1336 $\xrightleftharpoons[e_0374, s_0304, s_1336, s_0028, s_1335]{}$ s_1335	00000728 +
53	r_0166	3-oxoacyl-[acyl-carrier-protein] synthase (n-C14:0)	s_0789 + s_1216 $\xrightleftharpoons[e_0376, e_0732, s_0789, s_1216, s_0304, s_0397, s_0543]{}$ s_0304 + s_0397 + s_0543	0000176
54	r_0175	3-phosphoshikimate carboxyvinyltransferase	1- s_1484 + s_1574 $\xrightleftharpoons[e_0327, s_1484, s_1574, s_0359, s_1430]{}$ s_1430	00003769 +
55	r_0176	4,5-dihydroxy-2,3-pentanedione cyclization (spontaneous)	s_0310 $\xrightleftharpoons[s_0310, s_0004]{}$ s_0004	0000176

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56	r_0178	4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol kinase	s_0312 + s_0467 $\xrightleftharpoons[e_0404, s_0312, s_0467, s_0237, s_0421]{}$ 000002367 + s_0421	
57	r_0179	4-amino-2-methyl-5-phosphomethylpyrimidine synthetase	s_0342 + s_1333 $\xrightleftharpoons[e_1254, s_0342, s_1333, s_0313, s_0867, s_1334]{}$ 0000176 s_0313 + 2 s_0867 + s_1334	
58	r_0181	4-amino-4-deoxychorismate synthase	s_0526 + s_1101 $\xrightleftharpoons[e_1015, e_0572, s_0526, s_1101, s_0316, s_1095]{}$ 0000176 s_0316 + s_1095	
59	r_0182	4-aminobenzoate synthase	s_0316 $\xrightleftharpoons[e_0377, s_0316, s_0318, s_1531]{}$ s_0318 + 0000176 s_1531	
60	r_0186	5'-deoxyadenosine nucleosidase	s_0333 $\xrightleftharpoons[e_0074, s_0333, s_0334, s_0405]{}$ s_0334 + 0000176 s_0405	
61	r_0211	5,10-methylenetetrahydrofolate (NADH) reductase	s_0336 + s_1334 $\xrightleftharpoons[e_1234, s_0336, s_1334, s_0354, s_1333]{}$ 000003564 + s_1333	
62	r_0212	5-amino-6-(5-phosphoribosylamino)uracil reductase	s_0347 + s_1336 $\xrightleftharpoons[e_0144, s_0347, s_1336, s_0346, s_1335]{}$ 000003466 + s_1335	
63	r_0216	6-hydroxymethyl-dihydropterin pyrophosphokinase	s_0367 + s_0467 $\xrightleftharpoons[e_0064, s_0367, s_0467, s_0368, s_0454]{}$ 00000368 + s_0454	
64	r_0217	6-phosphogluconate dehydratase	s_0369 $\xrightleftharpoons[e_0579, s_0369, s_0201]{}$ s_0201 0000176	
65	r_0218	6-phosphogluconolactonase	s_0370 $\xrightleftharpoons[e_0273, s_0370, s_0369]{}$ s_0369 0000176	
66	r_0222	8-amino-7-oxononanoate synthase	s_1041 + s_1491 $\xrightleftharpoons[e_0276, s_1041, s_1491, s_0376, s_0397, s_0543]{}$ 0000176 s_0376 + s_0397 + s_0543	
67	r_0224	acetaldehyde dehydrogenase (acetylating)	s_0381 + s_0555 + 0000176 e_0125, e_0416, s_0381, s_0555, s_1333, s_0395, s_1334 $\xrightleftharpoons[s_1333]{}$ s_0395 + s_1334	

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68	r_0225	acetate kinase	s_0384 + s_0467 $\xrightleftharpoons[e_0975, e_0719, e_0577, s_0384, s_0467, s_0393, s_0421]{0000176}$ s_0393 + s_0421	
69	r_0227	acetolactate synthase	2 s_1531 $\xrightleftharpoons[e_1137, e_0034, e_0035, e_1136, s_1531, s_0042, s_0543]{0000176}$ s_0042 + s_0543	
70	r_0230	acetyl-CoA C-acetyltransferase	2 s_0395 $\xrightleftharpoons[e_0682, e_1202, e_0736, s_0395, s_0391, s_0555]{0000176}$ s_0391 + s_0555	
71	r_0231	acetyl-CoA C-acyltransferase (butanoyl-CoA) (r)	s_0395 + s_0488 $\xrightleftharpoons[e_1202, e_0736, s_0395, s_0488, s_0299, s_0555]{0000176}$ s_0299 + s_0555	
72	r_0232	acetyl-CoA C-acyltransferase (decanoyl-CoA) (r)	s_0395 + s_0737 $\xrightleftharpoons[e_1202, e_0736, s_0395, s_0737, s_0295, s_0555]{0000176}$ s_0295 + s_0555	
73	r_0233	acetyl-CoA C-acyltransferase (dodecanoyl-CoA) (r)	s_0395 + s_0790 $\xrightleftharpoons[e_1202, e_0736, s_0395, s_0790, s_0305, s_0555]{0000176}$ s_0305 + s_0555	
74	r_0234	acetyl-CoA C-acyltransferase (hexanoyl-CoA) (r)	s_0395 + s_0984 $\xrightleftharpoons[e_1202, e_0736, s_0395, s_0984, s_0303, s_0555]{0000176}$ s_0303 + s_0555	
75	r_0235	acetyl-CoA C-acyltransferase (octanoyl-CoA) (r)	s_0395 + s_1390 $\xrightleftharpoons[e_1202, e_0736, s_0395, s_1390, s_0293, s_0555]{0000176}$ s_0293 + s_0555	
76	r_0236	acetyl-CoA C-acyltransferase (tetradecanoyl-CoA) (r)	s_0395 + s_1632 $\xrightleftharpoons[e_1202, e_0736, s_0395, s_1632, s_0297, s_0555]{0000176}$ s_0297 + s_0555	
77	r_0237	acetyl-CoA carboxylase	s_0395 + s_0467 + 0000176 s_0474 $\xrightleftharpoons[e_0085, e_1006, e_1005, e_0730, s_0395, s_0467, s_0474, s_0421, s_1217, s_1217 + s_1430]{0000176}$ s_0421	
78	r_0243	acetylglutamate kinase	s_1302 + s_0467 $\xrightleftharpoons[e_1243, s_1302, s_0467, s_1304, s_0421]{0000176}$ s_0421	

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79	r_0244	acetylornithine deacetylase	s_1321 $\xrightleftharpoons[e_1241, s_1321, s_0384, s_1391]{}$ s_0384 + 0000176 s_1391	
80	r_0245	acetylornithine transaminase	s_1303 + s_1095 $\xrightleftharpoons[e_0559, e_1014, s_1303, s_1095, s_1321, s_0233]{}$ 0000176 s_1321 + s_0233	
81	r_0246	aconitase (half-reaction A, Citrate hydro-lyase)	s_0536 $\xrightleftharpoons[e_0431, e_0054, s_0536, s_0530]{}$ s_0530	0000176
82	r_0247	aconitase (half-reaction B, Isocitrate hydro-lyase)	s_0530 $\xrightleftharpoons[e_0431, e_0054, s_0530, s_1027]{}$ s_1027	0000176
83	r_0257	acyl-[acyl-carrier-protein] synthetase (n-C12:0)	s_0397 + s_0467 + 0000176 s_0785 $\xrightleftharpoons[e_0375, e_0896, s_0397, s_0467, s_0785, s_0454, s_0789, s_0783]{}$ s_0454 + s_0789 + s_0783	
84	r_0259	acyl-[acyl-carrier-protein] synthetase (n-C16:0)	s_0397 + s_0467 + 0000176 s_0971 $\xrightleftharpoons[e_0375, e_0896, s_0397, s_0467, s_0971, s_0454, s_1411, s_0783]{}$ s_0454 + s_1411 + s_0783	
85	r_0260	acyl-[acyl-carrier-protein] synthetase (n-C16:1)	s_0397 + s_0467 + 0000176 s_0976 $\xrightleftharpoons[e_0375, e_0896, s_0397, s_0467, s_0976, s_0454, s_0533, s_0783]{}$ s_0454 + s_0533 + s_0783	
86	r_0266	acyl-CoA dehydrogenase (butanoyl-CoA)	s_0574 + s_0860 $\xrightleftharpoons[e_0094, s_0574, s_0860, s_0488, s_0859]{}$ 000004788 + s_0859	
87	r_0267	acyl-CoA dehydrogenase (decanoyl-CoA)	s_1668 + s_0860 $\xrightleftharpoons[e_0094, s_1668, s_0860, s_0737, s_0859]{}$ 000007767 + s_0859	
88	r_0268	acyl-CoA dehydrogenase (dodecanoyl-CoA)	s_1670 + s_0860 $\xrightleftharpoons[e_0094, s_1670, s_0860, s_0790, s_0859]{}$ 00000790 + s_0859	

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89	r_0269	acyl-CoA dehydrogenase (hexadecanoyl-CoA)	s_0860 + s_1674 $\xrightleftharpoons[e_0094, s_0860, s_1674, s_0859, s_1412]{}$ 00000859 + s_1412	
90	r_0270	acyl-CoA dehydrogenase (hexanoyl-CoA)	s_0860 + s_1672 $\xrightleftharpoons[e_0094, s_0860, s_1672, s_0859, s_0984]{}$ 00000859 + s_0984	
91	r_0272	acyl-CoA dehydrogenase (octanoyl-CoA)	s_0860 + s_1676 $\xrightleftharpoons[e_0094, s_0860, s_1676, s_0859, s_1390]{}$ 00000859 + s_1390	
92	r_0273	acyl-CoA dehydrogenase (tetradecanoyl-CoA)	s_0860 + s_1680 $\xrightleftharpoons[e_0094, s_0860, s_1680, s_0859, s_1632]{}$ 00000859 + s_1632	
93	r_0292	adenosine kinase	s_0408 + s_0467 $\xrightleftharpoons[e_0167, s_0408, s_0467, s_0421, s_0454]{}$ 000004761 + s_0454	
94	r_0297	adenosylmethionine-8-amino-7-oxononanoate transaminase	s_0376 + s_1552 $\xrightleftharpoons[e_0274, s_0376, s_1552, s_1550, s_0371]{}$ 00001550 + s_0371	
95	r_0301	adenylate kinase	s_0454 + s_0467 $\xrightleftharpoons[e_0167, s_0454, s_0467, s_0421]{}$ 2 s_04000176	
96	r_0302	adenylosuccinate lyase	s_0040 $\xrightleftharpoons[e_0389, s_0040, s_0343, s_0875]{}$ s_0343 + 0000176 s_0875	
97	r_0303	adenylosuccinate synthase	s_1072 $\xrightleftharpoons[e_1315, s_1072, s_0945, s_1006, s_1327, s_0896, s_1430]{}$ s_0945 + 0000176 s_1006 $\xrightleftharpoons[s_0896 + s_1430]{}$ s_1327 + s_1430	
98	r_0304	adenylosuccinate lyase	s_1327 $\xrightleftharpoons[e_0389, s_1327, s_0454, s_0875]{}$ s_0454 + 0000176 s_0875	
99	r_0305	adenylyl-sulfate kinase	s_0412 + s_0467 $\xrightleftharpoons[e_0868, s_0412, s_0467, s_0421, s_0252]{}$ 000004761 + s_0252	
100	r_0310	alanine racemase	s_1041 $\xrightleftharpoons[e_0395, e_1275, s_1041, s_0600]{}$ s_0600 0000176	

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101	r_0348	anthranilate phosphoribosyltransferase	$s_{0457} + s_{0360} \xrightleftharpoons[e_{0428}, s_{0457}, s_{0360}, s_{0783}, s_{1278}]{00000763 + s_{1278}}$	
102	r_0349	anthranilate synthase	$s_{0526} + s_{1101} \xrightleftharpoons[e_{0429}, e_{0428}, s_{0526}, s_{1101}, s_{0457}, s_{1095}, s_{1531}]{0000176} s_{0457} + s_{1095} + s_{1531}$	
103	r_0355	arabinose-5-phosphate isomerase	$s_{0704} \xrightleftharpoons[e_{0993}, e_{0848}, s_{0704}, s_{0611}]{s_{0611}} 0000176$	
104	r_0360	argininosuccinate lyase	$s_{1274} \xrightleftharpoons[e_{1244}, s_{1274}, s_{1061}, s_{0875}]{s_{1061} + s_{0875}} 0000176$	
105	r_0361	argininosuccinate synthase	$s_{1072} + s_{0467} \xrightleftharpoons[e_{0986}, s_{1072}, s_{0467}, s_{1081}, s_{0454}, s_{1274}, s_{0783}]{s_{1081} + s_{0454} + s_{1274} + s_{0783}} 0000176$	
106	r_0365	asparagine synthetase	$s_{1072} + s_{0467} \xrightleftharpoons[e_{1160}, s_{1072}, s_{0467}, s_{0451}, s_{0454}, s_{1068}, s_{0783}]{s_{0451} + s_{1068} + s_{0783}} 0000176$	
107	r_0367	aspartate 1-decarboxylase	$s_{1072} + s_{0467} \xrightleftharpoons[e_{0061}, s_{1072}, s_{0470}, s_{0543}]{s_{0470} + s_{0543}} 0000176$	
108	r_0368	aspartate carbamoyltransferase	$s_{1072} + s_{0502} \xrightleftharpoons[e_{1340}, e_{1339}, s_{1072}, s_{0502}, s_{1312}, s_{1430}]{0000176} s_{1312} + s_{1430}$	
109	r_0369	aspartate kinase	$s_{1072} + s_{0467} \xrightleftharpoons[e_{1263}, e_{0001}, e_{1233}, s_{1072}, s_{0467}, s_{0332}, s_{0421}]{0000176} s_{0332} + s_{0421}$	
110	r_0370	aspartate transaminase	$s_{1095} + s_{1399} \xrightleftharpoons[e_{0332}, s_{1095}, s_{1399}, s_{0233}, s_{1072}]{00002763 + s_{1072}} 00002763$	
111	r_0371	aspartate-semialdehyde dehydrogenase	$s_{0332} + s_{1336} \xrightleftharpoons[e_{1045}, s_{0332}, s_{1336}, s_{1075}, s_{1335}, s_{1430}]{0000176} s_{1075} + s_{1335} + s_{1430}$	

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112	r_0374	ATP phosphoribosyltransferase	s_0467 + s_0360 $\xrightleftharpoons[e_0605, s_0467, s_0360, s_0783, s_0099]{}$ 00000783 + s_0099	
113	r_0383	Biotin synthase	s_0378 + s_1552 e_0275, s_0378, s_1552, s_0755, s_0377, s_0476, s_0333, s_1141 s_0755 $\xrightleftharpoons[s_0377 + s_0476 + s_0333 + s_1141]{}$ s_0377 +	0000176
114	r_0384	bis-molybdenum cofactor synthase	s_1264 + s_0420 $\xrightleftharpoons[e_0292, s_1264, s_0420, s_0454, s_0479, s_0579]{}$ 0000176 s_0454 + s_0479 + s_0579	
115	r_0385	bis-molybdopterin guanine dinucleotide synthase	s_0481 + s_0945 $\xrightleftharpoons[e_1207, e_1206, s_0481, s_0945, s_0480, s_0783]{}$ 0000176 s_0480 + s_0783	
116	r_0386	bis-molybdopterin guanine dinucleotide synthase (single GDP)	s_0479 + s_0945 $\xrightleftharpoons[e_1207, e_1206, s_0479, s_0945, s_0481, s_0783]{}$ 0000176 s_0481 + s_0783	
117	r_0388	Carbamate kinase	s_0467 + s_0543 e_0903, e_0183, e_0110, s_0467, s_0543, s_0451, s_0421, s_0502 s_0451 $\xrightleftharpoons[e_0903, e_0183, e_0110, s_0467, s_0543, s_0451, s_0421, s_0502]{}$ s_0421 + s_0502	0000176
118	r_0418	CDP-diacylglycerol synthetase (n-C16:0)	s_0575 + s_0075 $\xrightleftharpoons[e_0080, s_0575, s_0075, s_0513, s_0783]{}$ 00000563 + s_0783	
119	r_0419	CDP-diacylglycerol synthetase (n-C16:1)	s_0575 + s_0073 $\xrightleftharpoons[e_0080, s_0575, s_0073, s_0512, s_0783]{}$ 00000562 + s_0783	
120	r_0423	chorismate mutase	s_0526 $\xrightleftharpoons[e_0825, e_0826, s_0526, s_1497]{}$ s_1497	0000176
121	r_0424	Chorismate pyruvate lyase	s_0526 $\xrightleftharpoons[e_1271, s_0526, s_0325, s_1531]{}$ s_0325 + s_1531	0000176
122	r_0425	chorismate synthase	s_0359 $\xrightleftharpoons[e_0734, s_0359, s_0526, s_1430]{}$ s_0526 + s_1430	0000176

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123	r_0428	citrate synthase	s_0395 + s_1399 $\xrightleftharpoons[e_0246, s_0395, s_1399, s_0536, s_0555]{}$ 000005766 + s_0555	
124	r_0436	coproporphyrinogen oxidase (O2 required)	s_0565 + s_1372 $\xrightleftharpoons[e_0765, s_0565, s_1372, s_0543, s_1512]{}$ 000010643 + s_1512	
125	r_0440	CTP synthase (glutamine)	s_0467 + s_1101 $\xrightleftharpoons[s_1792]{e_0876, s_0467, s_1101, s_1792, s_0421, s_0575, s_1095, s_1430}$ 0000176 s_0421 + s_0575 + s_1095 + s_1430	
126	r_0445	cyclic pyranopterin monophosphate synthase	s_0945 $\xrightleftharpoons[e_0279, e_0280, s_0945, s_0585, s_0783]{}$ 0000176 s_0585 + s_0783	
127	r_0450	cystathionine b-lyase	s_1082 $\xrightleftharpoons[e_0951, e_0519, s_1082, s_1112, s_0451, s_1531]{}$ 0000176 + s_0451 + s_1531	
128	r_0452	cysteine synthase	s_1358 + s_0994 $\xrightleftharpoons[e_0757, e_0750, s_1358, s_0994, s_0384, s_1083]{}$ 0000176 s_0384 + s_1083	
129	r_0457	cytidylate kinase (CMP)	s_0467 + s_0539 $\xrightleftharpoons[e_0328, s_0467, s_0539, s_0421, s_0510]{}$ 000004761 + s_0510	
130	r_0463	D-alanine-D-alanine ligase (reversible)	2 s_0600 + s_0467 $\xrightleftharpoons[e_0043, e_0135, s_0600, s_0467, s_0421, s_0603, s_1430]{}$ 00000176 s_0421 + s_0603 + s_1430	
131	r_0488	dephospho-CoA kinase	s_0467 + s_0754 $\xrightleftharpoons[e_0046, s_0467, s_0754, s_0421, s_0555]{}$ 000004761 + s_0555	
132	r_0489	dethiobiotin synthase	s_0467 + s_0543 $\xrightleftharpoons[s_0371]{e_0278, s_0467, s_0543, s_0371, s_0421, s_0755, s_1430}$ 0000176 s_0421 + s_0755 + s_1430	
133	r_0498	diaminohydroxyphosphoribosylaminopyrimidine deaminase (25drapp)	e_0144, s_0160, s_0347, s_0451 $\xrightleftharpoons[s_0451]{}$ s_0347 + 0000176	

Nº	Id	Name	Reaction Equation	SBO
134	r_0499	diaminopimelate decarboxylase	s_1242 $\xrightleftharpoons[e_0897, s_1242, s_0543, s_{1131}]{}$ s_0543 + 0000176 s_{1131}	
135	r_0500	diaminopimelate epimerase	s_1211 $\xrightleftharpoons[e_1189, s_1211, s_{1242}]{}$ s_1242 0000176	
136	r_0501	dihydroorotic acid dehydrogenase (quinone8)	s_0052 + s_1732 $\xrightleftharpoons[e_0342, s_0052, s_{1732}, s_{1394}, s_{1731}]{}$ 00001764 + s_1731	
137	r_0502	dihydridopicolinate reductase (NADPH)	s_0155 + s_1336 $\xrightleftharpoons[e_0012, s_0155, s_{1336}, s_{1335}, s_0148]{}$ 00001765 + s_0148	
138	r_0503	dihydridopicolinate synthase	s_1075 + s_1531 $\xrightleftharpoons[e_0776, s_{1075}, s_{1531}, s_0155]{}$ s_0155 0000176	
139	r_0504	dihydrofolate reductase	s_0372 + s_1336 $\xrightleftharpoons[e_0514, e_0020, s_0372, s_{1336}, s_{1335}, s_0337]{}$ 0000176 s_1335 + s_0337	
140	r_0505	dihydrofolate synthase	s_0467 + s_1095 $\xrightleftharpoons[e_0729, s_0467, s_0767, s_{1095}, s_0421, s_0372, s_{1430}]{}$ s_0421 + s_0372 + s_1430 s_0467 + s_0767 + s_0421 + 0000176 s_0767 + s_0421 + s_0372 + s_1430 + 0000176	
141	r_0507	dihydronoopterin aldolase reversible	s_0765 $\xrightleftharpoons[e_0964, s_0765, s_0367, s_0936]{}$ s_0367 + 0000176 s_0765 + s_0367 + 0000176 s_0936 + 0000176	
142	r_0510	Dihydronoopterin triphosphate pyrophosphatase	s_0191 $\xrightleftharpoons[e_0045, e_0586, s_0191, s_0766, s_0783]{}$ s_0766 0000176 s_0783 + 0000176	
143	r_0511	dihydroorotase	s_1312 $\xrightleftharpoons[e_0368, s_{1312}, s_0052]{}$ s_0052 0000176	
144	r_0512	dihydroorotic acid (menaquinone-8)	s_0052 + s_1240 $\xrightleftharpoons[e_0342, s_0052, s_{1240}, s_{1239}, s_{1394}]{}$ 00001769 + s_1394	
145	r_0515	dihydropteroate synthase	s_0318 + s_0368 $\xrightleftharpoons[e_0988, s_0318, s_0368, s_0767, s_0783]{}$ 00001767 + s_0783	

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146	r_0517	dihydroxy-acid dehydratase (2,3-dihydroxy-3-methylbutanoate)	s_0017 $\xrightleftharpoons[e_1168, s_0017, s_0282]{}$ s_0282	0000176
147	r_0518	Dihydroxy-acid dehydratase (2,3-dihydroxy-3-methylpentanoate)	s_0018 $\xrightleftharpoons[e_1168, s_0018, s_0051]{}$ s_0051	0000176
148	r_0522	dimethylallyltransferase	s_0779 + s_1028 $\xrightleftharpoons[e_0150, s_0779, s_1028, s_0903, s_0783]{}$ 00000963 + s_0783	
149	r_0532	dTMP kinase	s_0467 + s_0802 $\xrightleftharpoons[e_0378, s_0467, s_0802, s_0421, s_0795]{}$ 000004761 + s_0795	
150	r_0533	dUTP diphosphatase	s_0810 $\xrightleftharpoons[e_1128, e_0691, s_0810, s_0807, s_0783]{}$ s_0807 0000176 s_0783	
151	r_0538	enolase	s_0675 $\xrightleftharpoons[e_0875, s_0675, s_1484]{}$ s_1484	0000176
152	r_0563	Enoylglutaryl-[ACP] methyl ester reductase	s_0812 + s_1336 $\xrightleftharpoons[e_0436, s_0812, s_1336, s_0910, s_1335]{}$ 00000960 + s_1335	
153	r_0564	Enoylpimeloyl-[ACP] methyl ester reductase	s_0813 + s_1336 $\xrightleftharpoons[e_0436, s_0813, s_1336, s_1335, s_1492]{}$ 00001365 + s_1492	
154	r_0573	Erythronate 4-phosphate (4per) dehydrogenase	s_0331 + s_1333 $\xrightleftharpoons[e_0731, s_0331, s_1333, s_1334, s_0231]{}$ 00001364 + s_0231	
155	r_0574	Erythrose 4-phosphate dehydrogenase	s_0621 + s_1333 $\xrightleftharpoons[e_0926, e_0567, s_0621, s_1333, s_0331, s_1334]{}$ 0000176 + s_0331 + s_1334	
156	r_0576	FAD reductase	s_0859 + s_1334 $\xrightleftharpoons[e_1201, s_0859, s_1334, s_0860, s_1333]{}$ 00000860 + s_1333	
157	r_0579	fatty-acid-CoA thioesterase (dodecanoate)	s_0790 $\xrightleftharpoons[e_0162, s_0790, s_0555, s_0785]{}$ s_0555 + s_0785	0000176

Nº	Id	Name	Reaction Equation	SBO
158	r_0580	fatty-acid-CoA thioesterase (hexadecanoate)	s_1412 $\xrightleftharpoons[e_0162, s_1412, s_0555, s_0971]{s_0555}$ s_0555 + 0000176 s_0971	
159	r_0581	fatty-acid-CoA thioesterase (hexadecenoate)	s_0979 $\xrightleftharpoons[e_0162, s_0979, s_0555, s_0976]{s_0555}$ s_0555 + 0000176 s_0976	
160	r_0602	Ferrochelatase	s_0838 + s_1511 $\xrightleftharpoons[e_0168, s_0838, s_1511, s_1508]{s_1508}$ s_1508 0000176	
161	r_0611	FMN adenylyltransferase	s_0467 + s_0863 $\xrightleftharpoons[e_0008, s_0467, s_0863, s_0859, s_0783]{s_0783}$ 00000859 + s_0783	
162	r_0622	formate-tetrahydrofolate ligase	s_0467 + s_0867 $\xrightleftharpoons[s_0467, s_0867, s_0337, s_0133, s_0421, s_1430]{s_0337}$ s_0133 + s_0421 + s_1430 + 0000176	
163	r_0632	fumarase	s_0875 $\xrightleftharpoons[e_1298, e_0515, e_0516, s_0875, s_1138]{s_1138}$ s_1138 0000176	
164	r_0648	GAR transformylase-T	s_0467 + s_0867 $\xrightleftharpoons[e_0577, s_0467, s_0867, s_1318, s_0421, s_1322, s_1430]{s_1318}$ s_0421 + s_1322 + s_1430 + 0000176	
165	r_0655	geranyltransterase	s_0903 + s_1028 $\xrightleftharpoons[e_0150, s_0903, s_1028, s_0826, s_0783]{s_0783}$ 00000876 + s_0783	
166	r_0658	glucosamine-1-phosphate acetyltransferase	N- s_0395 + s_0653 $\xrightleftharpoons[s_0555]{e_1150, s_0395, s_0653, s_1287, s_0555}$ 00001287 + s_0555	
167	r_0660	glucose 6-phosphate dehydrogenase	s_0663 + s_1335 $\xrightleftharpoons[e_0580, s_0663, s_1335, s_0370, s_1336]{s_1336}$ 00000376 + s_1336	
168	r_0664	glucose-6-phosphate isomerase	s_0663 $\xrightleftharpoons[e_1264, s_0663, s_0627]{s_0627}$ 0000176	
169	r_0673	glutamate 5-kinase	s_0467 + s_1095 $\xrightleftharpoons[e_0099, s_0467, s_1095, s_0421, s_1099]{s_1099}$ 00000471 + s_1099	

Nº	Id	Name	Reaction Equation	SBO
170	r_0675	glutamate dehydrogenase (NADP)	s_0233 + s_1336 + 0000176 e_0561, s_0233, s_1336, s_0451, s_1095, s_1335 s_1095 + s_1335	
171	r_0676	glutamate racemase	s_1095 e_1247, s_1095, s_0671 s_0671 0000176	
172	r_0678	glutamate-1-semialdehyde aminotransferase	s_1098 e_0071, s_1098, s_0345 s_0345 0000176	
173	r_0679	glutamate-5-semialdehyde dehydrogenase	s_1099 + s_1336 e_0100, s_1099, s_1336, s_1100, s_1335, s_1430 0000176 s_1100 + s_1335 + s_1430	
174	r_0682	glutamine phosphoribosyldiphosphate amidotransferase	s_1101 + s_0360 e_0728, s_1101, s_0360, s_1095, s_0783, s_0361 0000176 s_1095 + s_0783 + s_0361	
175	r_0683	glutamine synthetase	s_0467 + s_1095 + 0000176 e_1210, e_0439, s_0467, s_1095, s_0451, s_0421, s_1101, s_1430 s_0421 + s_1101 + s_1430	
176	r_0684	glutamine-fructose-6-phosphate transaminase	s_0627 + s_1101 e_1149, s_0627, s_1101, s_0654, s_1095 00006754 + s_1095	
177	r_0686	glutamyl-tRNA reductase	s_1105 + s_1336 e_0405, s_1105, s_1336, s_1098, s_1335, s_1690 0000176 s_1098 + s_1335 + s_1690	
178	r_0687	Glutamyl-tRNA synthetase	s_0467 + s_1095 + 0000176 e_0746, s_0467, s_1095, s_1690, s_0454, s_1105, s_0783 s_0454 + s_1105 + s_0783	
179	r_0695	glyceraldehyde-3-phosphate dehydrogenase	s_0913 + s_1333 + 0000176 e_0567, s_0913, s_1333, s_1430, s_0307, s_1334 s_0307 + s_1334	
180	r_0697	glycerate kinase	s_0467 + s_0029 e_0978, s_0467, s_0029, s_0675, s_0421 0000675 + s_0421	

Nº	Id	Name	Reaction Equation	SBO
181	r_0706	glycerol-3-phosphate acyltransferase (C16:0)	s_0920+s_1411 $\xrightleftharpoons[e_0375, e_1273, s_0920, s_1411, s_0121, s_0397]{0000176}$ s_0121+s_0397	
182	r_0707	glycerol-3-phosphate acyltransferase (C16:1)	s_0920+s_0533 $\xrightleftharpoons[e_0375, e_1273, s_0920, s_0533, s_0119, s_0397]{0000176}$ s_0119+s_0397	
183	r_0712	glycerol-3-phosphate (NADP) dehydrogenase	s_0772+s_1336 $\xrightleftharpoons[e_1106, s_0772, s_1336, s_0920, s_1335]{00000920+}$ s_1335	
184	r_0724	glycine C-acetyltransferase	s_1040+s_0555 $\xrightleftharpoons[e_1110, s_1040, s_0555, s_0395, s_0929]{00000365+}$ s_0929	
185	r_0726	glycine hydroxymethyltransferase, reversible	s_1170+s_0337 $\xrightleftharpoons[e_0813, s_1170, s_0337, s_0929, s_0336]{00000929+}$ s_0336	
186	r_0731	Glycolaldehyde dehydrogenase	s_0936+s_1333 $\xrightleftharpoons[e_0466, s_0936, s_1333, s_0937, s_1334]{00000937+}$ s_1334	
187	r_0734	Glycolate oxidase	s_0937+s_1732 $\xrightleftharpoons[e_1376, e_0941, e_1377, s_0937, s_1732, s_0941, s_1731]{0000176}$ s_0941+s_1731	
188	r_0735	Glycolate oxidase	s_0937+s_1240 $\xrightleftharpoons[e_1376, e_0941, e_1377, s_0937, s_1240, s_0941, s_1239]{0000176}$ s_0941+s_1239	
189	r_0739	glyoxalate carboligase	2 s_0941 $\xrightleftharpoons[e_0175, s_0941, s_0214, s_0543]{}$ s_0214 + 0000176 s_0543	
190	r_0741	GMP synthase	s_0467 + s_1101 + 0000176 $\xrightleftharpoons[s_1799]{e_0795, s_0467, s_1101, s_1799, s_0454, s_1095, s_0942, s_0783}$ s_0454 + s_1095 + s_0942 + s_0783	
191	r_0744	GTP cyclohydrolase I	s_0945 $\xrightleftharpoons[e_0657, s_0945, s_0191, s_0867]{}$ s_0191 + 0000176 s_0867	

Nº	Id	Name	Reaction Equation	SBO
192	r_0745	GTP cyclohydrolase II (25drapp)	s_0945 $\xrightleftharpoons[s_0867 + s_0783]{e_0432, s_0945, s_0160, s_0867, s_0783}$ s_0160000176	
193	r_0754	guanylate kinase (GMP:ATP)	s_0467 + s_0942 $\xrightleftharpoons[e_1130, s_0467, s_0942, s_0421, s_0896]{s_0467 + s_0942}$ 000004761 + s_0896	
194	r_0755	HCO3 equilibration reaction	s_0543 $\xrightleftharpoons[e_0060, e_0116, s_0543, s_0474]{e_0060, e_0116, s_0543, s_0474}$ s_0474 0000176	
195	r_0761	hexokinase (D-fructose:ATP)	s_0467 + s_0622 $\xrightleftharpoons[e_0139, s_0467, s_0622, s_0421, s_0627]{s_0467 + s_0622}$ 000004761 + s_0627	
196	r_0762	hexokinase (D-glucose:ATP)	s_0467 + s_0657 $\xrightleftharpoons[e_0743, s_0467, s_0657, s_0421, s_0663]{e_0743, s_0467, s_0657, s_0421, s_0663}$ 000004761 + s_0663	
197	r_0763	histidinol dehydrogenase	s_1109 + 2 s_1333 $\xrightleftharpoons[e_0606, s_1109, s_1333, s_1106, s_1334]{e_0606, s_1109, s_1333, s_1106, s_1334}$ 000017606 + 2 s_1334	
198	r_0764	histidinol-phosphatase	s_1110 $\xrightleftharpoons[e_0608, s_1110, s_1109, s_1430]{e_0608, s_1110, s_1109, s_1430}$ s_1109 + 0000176 s_1430	
199	r_0765	histidinol-phosphate transaminase	s_1095 + s_0263 $\xrightleftharpoons[e_0607, s_1095, s_0263, s_0233, s_1110]{e_0607, s_1095, s_0263, s_0233, s_1110}$ 000002763 + s_1110	
200	r_0769	homoserine dehydrogenase (NADPH)	s_1075 + s_1336 $\xrightleftharpoons[e_0001, e_1233, s_1075, s_1336, s_1113, s_1335]{e_0001, e_1233, s_1075, s_1336, s_1113, s_1335}$ 0000176 s_1113 + s_1335	
201	r_0770	homoserine kinase	s_0467 + s_1113 $\xrightleftharpoons[e_0002, s_0467, s_1113, s_0421, s_1363]{s_0467 + s_1113}$ 000004761 + s_1363	
202	r_0771	homoserine O-succinyltransferase	s_1113 + s_1599 $\xrightleftharpoons[e_1259, s_1113, s_1599, s_0555, s_1367]{e_1259, s_1113, s_1599, s_0555, s_1367}$ 000005765 + s_1367	
203	r_0775	Hydroxybenzoate octaprenyltransferase	s_0325 + s_0435 $\xrightleftharpoons[e_1272, s_0325, s_0435, s_0283, s_0783]{s_0325 + s_0435}$ 000002763 + s_0783	

Nº	Id	Name	Reaction Equation	SBO
204	r_0777	hydroxymethylbilane synthase	$4 \text{s_1493} \xrightleftharpoons[\text{4 s_0451}]{\text{e_1186, s_1493, s_0998, s_0451}} \text{s_0998} + 0000176$	
205	r_0784	Imidazole-glycerol-3-phosphate synthase	$\text{s_1101+s_0341} \xrightleftharpoons[\text{s_0620+s_1095}]{\text{e_0611, e_0609, s_1101, s_0341, s_0343, s_0620, s_1095}} 0000176 \xrightleftharpoons[\text{s_0343+s_0620+s_1095}]{}$	
206	r_0785	imidazoleglycerol-phosphate dehydratase	$\text{s_0620} \xrightleftharpoons[\text{s_0620, s_0263}]{\text{e_0608, s_0620, s_0263}} \text{s_0263} 0000176$	0000176
207	r_0786	IMP cyclohydrolase	$\text{s_0352} \xrightleftharpoons[\text{s_1006}]{\text{e_1258, s_0352, s_1006}} \text{s_1006} 0000176$	0000176
208	r_0787	IMP dehydrogenase	$\text{s_1006+s_1333} \xrightleftharpoons[\text{s_1799}]{\text{e_0796, s_1006, s_1333, s_1334, s_1799}} 00001764 + \text{s_1799}$	00001764 +
209	r_0788	indole-3-glycerol-phosphate synthase	$\text{s_0096} \xrightleftharpoons[\text{s_0543}]{\text{e_0427, s_0096, s_0493, s_0543}} \text{s_0493} + 0000176$	0000176
210	r_0796	ISC [2Fe-2S] regeneration	$\text{s_0377} + \text{s_1018} + 0000176 \\ \text{s_1019} \xrightleftharpoons[\text{s_1017+s_1020}]{\text{e_0805, e_0804, s_0377, s_1018, s_1019, s_1017, s_1020}} \text{s_1017} + \text{s_1020}$	0000176
211	r_0797	ISC [2Fe-2S] Synthesis	$\text{s_0860} + 2 \text{s_0838} + 2 \text{s_1018} + 0000176 \\ \text{s_1019} \xrightleftharpoons[\text{2 s_1017+s_1020}]{\text{e_0804, e_1188, e_0805, s_0860, s_0838, s_1018, s_1019, s_0859, s_1017, s_1020}} \text{s_1017} + \text{s_1020}$	0000176
212	r_0798	ISC [2Fe-2S] Synthesis II	$\text{s_0860} + 2 \text{s_0838} + 2 \text{s_1018} + 0000176 \\ \text{s_1020} \xrightleftharpoons[\text{2 s_1017+s_1022}]{\text{e_0804, e_1188, e_0805, s_0860, s_0838, s_1018, s_1020, s_0859, s_1017, s_1022}} \text{s_1017} + \text{s_1022}$	0000176
213	r_0799	ISC [2Fe-2S] Transfer	$\text{s_1020} \xrightleftharpoons[\text{s_1019}]{\text{e_0803, e_0804, s_1020, s_0378, s_1019}} \text{s_0378} 0000176$	0000176
214	r_0800	ISC [4Fe-4S] Reduction	$\text{s_0860+s_1022} \xrightleftharpoons[\text{s_1021}]{\text{e_0804, s_0860, s_1022, s_0859, s_1021}} 0000859 + \text{s_1021}$	0000859 +

Nº	Id	Name	Reaction Equation	SBO
215	r_0801	ISC [4Fe-4S] Transfer	s_1021 $\xrightleftharpoons[e_0803, e_0804, s_1021, s_0380, s_1019]{}$ s_0380 + 0000176	
216	r_0802	ISC Cysteine desulfuration	s_1083 + s_1017 $\xrightleftharpoons[e_0805, s_1083, s_1017, s_1041, s_1018]{}$ 0000176 + s_1018	
217	r_0806	isocitrate dehydrogenase (NADP)	s_1027 + s_1335 $\xrightleftharpoons[e_0391, s_1027, s_1335, s_0233, s_0543, s_1336]{}$ 0000176 + s_0233 + s_0543 + s_1336	
218	r_0808	isoleucine transaminase	s_0051 + s_1095 $\xrightleftharpoons[e_1167, s_0051, s_1095, s_0233, s_1119]{}$ 00000276 + s_1119	
219	r_0811	ketol-acid reductoisomerase (2,3-dihydroxy-3-methylbutanoate)	s_0042 + s_1336 $\xrightleftharpoons[e_1170, s_0042, s_1336, s_0017, s_1335]{}$ 00000767 + s_1335	
220	r_0812	ketol-acid reductoisomerase (2-Acetolactate)	s_0041 + s_1336 $\xrightleftharpoons[e_1170, s_0041, s_1336, s_0018, s_1335]{}$ 00000768 + s_1335	
221	r_0815	L-alanine transaminase	s_1095 + s_1531 $\xrightleftharpoons[e_0742, e_0717, s_1095, s_1531, s_0233, s_1041]{}$ 0000176 + s_0233 + s_1041	
222	r_0829	L-aspartate oxidase	s_1072 + s_1372 $\xrightleftharpoons[e_0819, s_1072, s_1372, s_0991, s_1005]{}$ 00000961 + s_1005	
223	r_0835	L-glutamate 5-semialdehyde dehydratase (spontaneous)	s_1100 $\xrightleftharpoons[s_1100, s_0128]{}$ s_0128	0000176
224	r_0847	L-threonine deaminase	s_1179 $\xrightleftharpoons[e_1169, e_0977, s_1179, s_0232, s_0451]{}$ s_0232 + 0000176	
225	r_0848	L-threonine dehydrogenase	s_1333 + s_1179 $\xrightleftharpoons[e_1109, s_1333, s_1179, s_1040, s_1334]{}$ 0000176 + s_1334	

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226	r_0854	leucine transaminase (irreversible)	s_0328 + s_1095 $\xrightleftharpoons[e_{1167}, e_{1276}, s_{0328}, s_{1095}, s_{0233}, s_{1127}]{}$ 0000176 s_0233 + s_1127	
227	r_0857	Lipid A disaccharide synthase	s_0149 + s_1734 $\xrightleftharpoons[e_{0084}, s_{0149}, s_{1734}, s_{1204}, s_{1733}]{}$ 00001264 + s_1733	
228	r_0925	malate dehydrogenase	s_1138 + s_1333 $\xrightleftharpoons[e_{1004}, s_{1138}, s_{1333}, s_{1334}, s_{1399}]{}$ 00001364 + s_1399	
229	r_0928	malate oxidase	s_0991 + s_1399 $\xrightleftharpoons[s_{0991}, s_{1399}, s_{1138}, s_{1372}]{}$ s_1138 0000176 s_1372	
230	r_0934	Malonyl-CoA methyltransferase	s_1552 + s_1217 $\xrightleftharpoons[e_{0277}, s_{1552}, s_{1217}, s_{1551}, s_{1218}]{}$ 00001561 + s_1218	
231	r_0935	Malonyl-CoA-ACP transacylase	s_0397 + s_1217 $\xrightleftharpoons[e_{0375}, e_{0373}, s_{0397}, s_{1217}, s_{0555}, s_{1216}]{}$ 0000176 s_0555 + s_1216	
232	r_0950	methenyltetrahydrofolate cyclohydrolase	s_0335 $\xrightleftharpoons[e_{0188}, s_{0335}, s_{0133}]{}$ s_0133 0000176	
233	r_0951	methionine adenosyltransferase	s_0467 + s_1141 $\xrightleftharpoons[e_{0931}, s_{0467}, s_{1141}, s_{1552}, s_{1430}, s_{0783}]{}$ 0000176 s_1552 + s_1430 + s_0783	
234	r_0954	methionine synthase	s_0354 + s_1112 $\xrightleftharpoons[e_{1196}, e_{1262}, s_{0354}, s_{1112}, s_{1141}, s_{0337}]{}$ 0000176 s_1141 + s_0337	
235	r_0957	methylenetetrahydrofolate dehydrogenase (NADP)	s_0336 + s_1335 $\xrightleftharpoons[e_{0188}, s_{0336}, s_{1335}, s_{0335}, s_{1336}]{}$ 00000365 + s_1336	
236	r_0963	MoaD sulfuration (nadh, assumed)	s_1018 + s_1258 $\xrightleftharpoons[e_{0281}, e_{0805}, s_{1018}, s_{1258}, s_{1334}, s_{0454}, s_{1017}, s_{1260}, s_{1333}]{}$ 0000176 s_1334 $\xrightleftharpoons[s_{1017} + s_{1260} + s_{1333}]{}$ s_04	

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237	r_0964	molybdenum cofactor synthase	s_1261 + s_0420 $\xrightleftharpoons[e_0292, s_1261, s_0420, s_0454, s_0579, s_1264]{0000176}$ s_0454 + s_0579 + s_1264	
238	r_0965	molybdopterin adenylyltransferase	s_0467 + s_1265 $\xrightleftharpoons[e_0006, s_0467, s_1265, s_0420, s_0783]{0000476}$ s_0783	
239	r_0968	molybdopterin synthase	s_0585 $\xrightleftharpoons[2\ s_1260]{e_0281, e_0282, s_0585, s_0579, s_1260, s_1259, s_1265} s_0579 + 0000176$ 2 s_1259 + s_1265	
240	r_0969	molybdopterin synthase sulfurylase	s_0467 + s_1259 $\xrightleftharpoons[e_0291, s_0467, s_1259, s_1258, s_0783]{00001258}$ s_0783	
241	r_0970	murein crosslinking transpeptidase 1A:(A2pm->D-ala) (periplasm)	s_1725 $\xrightleftharpoons[e_0036, e_1029, e_0221, e_0065, s_1725, s_0600, s_1719]{0000176}$ s_0600 + s_1719	
242	r_0996	N-acetyl-g-glutamyl-phosphate reductase	s_1304 + s_1336 $\xrightleftharpoons[e_1242, s_1304, s_1336, s_1303, s_1335, s_1430]{0000176}$ s_1303 + s_1335 + s_1430	
243	r_0999	N-acetylglutamate synthase	s_0395 + s_1095 $\xrightleftharpoons[e_0893, s_0395, s_1095, s_1302, s_0555]{00001362}$ s_0555	
244	r_1006	NAD kinase	s_0467 + s_1333 $\xrightleftharpoons[e_0828, s_0467, s_1333, s_0421, s_1335]{0000476}$ s_1335	
245	r_1008	NAD synthase (nh3)	s_0467 $\xrightleftharpoons[s_0451]{e_0554, s_0467, s_0732, s_0451, s_0454, s_1333, s_0783} s_0732 + 0000176$ s_0454 + s_1333 + s_0783	
246	r_1019	nicotinate-nucleotide adenylyltransferase	s_0467 + s_1340 $\xrightleftharpoons[e_0223, s_0467, s_1340, s_0732, s_0783]{00000762}$ s_0783	
247	r_1021	nicotinate-nucleotide diphosphorylase (carboxylating)	s_0360 + s_1537 $\xrightleftharpoons[e_0048, s_0360, s_1537, s_0543, s_1340, s_0783]{0000176}$ s_0543 + s_1340 + s_0783	

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248	r_1039	nucleoside-diphosphate kinase (ATP:CDP)	s_0467+s_0510 $\xrightleftharpoons[e_0799, e_0167, s_0467, s_0510, s_0421, s_0575]{s_000176}$ s_0421 + s_0575	
249	r_1043	nucleoside-diphosphate kinase (ATP:dTDP)	s_0467+s_0795 $\xrightleftharpoons[e_0799, e_0167, s_0467, s_0795, s_0421, s_0805]{s_000176}$ s_0421 + s_0805	
250	r_1045	nucleoside-diphosphate kinase (ATP:GDP)	s_0467+s_0896 $\xrightleftharpoons[e_0799, e_0167, s_0467, s_0896, s_0421, s_0945]{s_000176}$ s_0421 + s_0945	
251	r_1046	nucleoside-diphosphate kinase (ATP:UDP)	s_0467+s_1733 $\xrightleftharpoons[e_0799, e_0167, s_0467, s_1733, s_0421, s_1792]{s_000176}$ s_0421 + s_1792	
252	r_1047	nucleoside-triphosphatase (ATP)	s_0467 $\xrightleftharpoons[e_1313, e_0225, s_0467, s_0421, s_1430]{s_0421}$ s_0421 $\xrightleftharpoons[s_1430]{s_000176}$	0000176
253	r_1054	O-Phospho-4-hydroxy-L-threonine:2-oxoglutarate aminotransferase	s_1095+s_0231 $\xrightleftharpoons[e_0326, s_1095, s_0231, s_0233, s_1362]{s_000276}$ s_1362	+0000276
254	r_1057	O-succinylhomoserine lyase (L-cysteine)	s_1083+s_1367 $\xrightleftharpoons[e_1232, s_1083, s_1367, s_1082, s_1595]{s_0001082}$ s_1595	+0001082
255	r_1063	Octaprenyl pyrophosphate synthase	s_0826+5 s_1028 $\xrightleftharpoons[e_0990, s_0826, s_1028, s_0435, s_0783]{s_00010435}$ +5 s_0783	+00010435
256	r_1064	Octaprenyl-hydroxybenzoate decarboxylase	s_0283 $\xrightleftharpoons[e_0727, e_1200, s_0283, s_0229, s_0543]{s_0229}$ s_0229 $\xrightleftharpoons[s_0543]{s_000176}$	0000176
257	r_1065	ornithine carbamoyltransferase	s_0502+s_1391 $\xrightleftharpoons[e_1341, e_0103, s_0502, s_1391, s_1081, s_1430]{s_000176}$ s_1081 + s_1430	+000176
258	r_1067	orotate phosphoribosyltransferase	s_1394+s_0360 $\xrightleftharpoons[e_1129, s_1394, s_0360, s_1397, s_0783]{s_0001307}$ +s_0783	+0001307

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259	r_1068	orotidine-5'-phosphate decarboxylase	s_1397 $\xrightleftharpoons[e_0435, s_1397, s_0543, s_1762]{}$ s_0543 + 0000176 s_1762	
260	r_1074	pantetheine-phosphate adenylyltransferase	s_0467+s_1413 $\xrightleftharpoons[e_1126, s_0467, s_1413, s_0754, s_0783]{}$ 00001764 + s_0783	
261	r_1075	pantothenate kinase	s_0467+s_0033 $\xrightleftharpoons[e_1249, s_0467, s_0033, s_0599, s_0421]{}$ 00000509 + s_0421	
262	r_1076	pantothenate synthase	s_0470 + s_0467 $\xrightleftharpoons[s_0032]{e_0062, s_0470, s_0467, s_0032, s_0454, s_0033, s_0783}$ + 0000176 s_0032 $\xrightleftharpoons[s_0454+s_0033+s_0783]{}$ s_0454 + s_0033 + s_0783	
263	r_1081	phenylalanine transaminase	s_1095+s_1429 $\xrightleftharpoons[e_1167, e_1276, e_0332, s_1095, s_1429, s_0233, s_1151]{}$ 0000176 s_0233 + s_1151	
264	r_1123	Phosphatidylserine decarboxylase (n-C16:0)	s_1477 $\xrightleftharpoons[e_1312, s_1477, s_0543, s_1437]{}$ s_0543 + 0000176 s_1437	
265	r_1124	Phosphatidylserine decarboxylase (n-C16:1)	s_1476 $\xrightleftharpoons[e_1312, s_1476, s_0543, s_1435]{}$ s_0543 + 0000176 s_1435	
266	r_1130	Phosphatidylserine syntase (n-C16:0)	s_0513+s_1170 $\xrightleftharpoons[e_0823, s_0513, s_1170, s_0539, s_1477]{}$ 00000569 + s_1477	
267	r_1131	Phosphatidylserine syntase (n-C16:1)	s_0512+s_1170 $\xrightleftharpoons[e_0823, s_0512, s_1170, s_0539, s_1476]{}$ 00000569 + s_1476	
268	r_1134	phospho-L-serine phosphatase (periplasmic)	s_1364 $\xrightleftharpoons[e_1277, e_1369, s_1364, s_1430, s_1170]{}$ s_1430 0000176 s_1170	
269	r_1137	phospho-N-acetylmuramoyl-pentapeptide-transferase (meso-2,6-diaminopimelate)	s_1768+s_1755 $\xrightleftharpoons[e_0039, s_1768, s_1755, s_1777, s_1762]{}$ 00001767 + s_1762	

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270	r_1139	phosphoadenylyl-sulfate reductase (thioredoxin)	s_0252 + s_1544 $\xrightleftharpoons[e_0871, e_1172, e_0822, s_0252, s_1544, s_0411, s_1612, s_1406]{0000176}$ s_01612 + s_1406	
271	r_1141	phosphoenolpyruvate carboxylase	s_0543 + s_1484 $\xrightleftharpoons[e_1240, s_0543, s_1484, s_1399, s_1430]{00001769+}$ s_1430	
272	r_1150	phosphoglucosamine mutase	s_0654 $\xrightleftharpoons[e_0987, s_0654, s_0653]{0000176}$ s_0653	0000176
273	r_1151	phosphoglycerate dehydrogenase	s_0306 + s_1333 $\xrightleftharpoons[e_0918, s_0306, s_1333, s_0308, s_1334]{00003768+}$ s_1334	00003768+
274	r_1152	phosphoglycerate kinase	s_0307 + s_0421 $\xrightleftharpoons[e_0925, s_0307, s_0421, s_0306, s_0467]{00003766+}$ s_0467	00003766+
275	r_1153	phosphoglycerate mutase	s_0306 $\xrightleftharpoons[e_1108, e_1373, e_0264, s_0306, s_0675]{0000176}$ s_0675	0000176
276	r_1198	phosphomethylpyrimidine kinase	s_0313 + s_0467 $\xrightleftharpoons[e_0641, s_0313, s_0467, s_0218, s_0421]{00002768+}$ s_0421	00002768+
277	r_1200	phosphopantetheate-cysteine ligase	s_0599 $\xrightleftharpoons[e_1127, s_0599, s_0575, s_1083, s_1277, s_0539, s_0783]{0000176}$ s_1083 + s_0575 + s_1277 + s_0539 + s_0783	0000176
278	r_1201	phosphopantethenoylcysteine decarboxylase	s_1277 $\xrightleftharpoons[e_1127, s_1277, s_0543, s_1413]{0000176}$ s_0543 + s_1413	0000176
279	r_1202	phosphopentomutase	s_0446 $\xrightleftharpoons[e_1023, e_1366, s_0446, s_0445]{0000176}$ s_0445	0000176
280	r_1204	phosphoribosyl-AMP cyclohydrolase	s_0098 $\xrightleftharpoons[e_0612, s_0098, s_0097]{0000176}$ s_0097	0000176
281	r_1205	phosphoribosyl-ATP pyrophosphatase	s_0099 $\xrightleftharpoons[e_0612, s_0099, s_0783, s_0098]{0000176}$ s_0783 + s_0098	0000176

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282	r_1206	phosphoribosylaminoimidazole carboxylase	s_0342 + s_0467 + 0000176 e_0184, s_0342, s_0467, s_0474, s_0362, s_0421, s_1430 s_0474 s_0362 + s_0421 + s_1430	
283	r_1207	phosphoribosylaminoimidazole carboxylase (mutase rxn)	s_0362 ⇌ s_0344	0000176
284	r_1208	phosphoribosylaminoimidazole synthase	s_0467 + s_0162 e_0791, s_0467, s_0162, s_0421, s_0342, s_1430 0000176 s_0421 + s_0342 + s_1430	
285	r_1209	phosphoribosylaminoimidazolecarboxamide formyltransferase	s_0133 + s_0343 e_1258, s_0133, s_0343, s_0352, s_0337 0000352 + s_0337	
286	r_1210	phosphoribosylaminoimidazolesuccinocarboxamide synthase	s_0344 + s_1072 + 0000176 e_0775, s_0344, s_1072, s_0467, s_0040, s_0421, s_1430 s_0467 s_0040 + s_0421 + s_1430	
287	r_1211	phosphoribosylanthranilate isomerase (irreversible)	s_1278 ⇌ s_0096	0000176
288	r_1212	phosphoribosylformylglycinamide synthase	syn- s_0467 + s_1322 + 0000176 e_0815, s_0467, s_1322, s_1101, s_0421, s_0162, s_1095, s_1430 s_1101 s_0421 + s_0162 + s_1095 + s_1430	
289	r_1214	phosphoribosylglycinamide synthase	s_0467 + s_0929 + 0000176 e_1257, s_0467, s_0929, s_0361, s_0421, s_1318, s_1430 s_0361 s_0421 + s_1318 + s_1430	
290	r_1215	phosphoribosylpyrophosphate synthetase	s_0467 + s_0446 e_0403, s_0467, s_0446, s_0454, s_0360 0000454 + s_0360	
291	r_1217	phosphoserine transaminase	s_0308 + s_1095 e_0326, s_0308, s_1095, s_0233, s_1364 0000263 + s_1364	

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292	r_1218	phosphotransacetylase	$s_{.0393} + s_{.0555} \xrightleftharpoons[e_{.0768}, s_{.0720}, s_{.0393}, s_{.0555}, s_{.0395}, s_{.1430}]{0000176} s_{.0395} + s_{.1430}$	
293	r_1220	Pimeloyl-[ACP] methyl ester esterase	$s_{.1492} \xrightleftharpoons[e_{.1034}, s_{.1492}, s_{.1248}, s_{.1491}]{0000176} s_{.1248} + s_{.1491}$	
294	r_1222	polyphosphate kinase	$s_{.0421} + s_{.0783} \xrightleftharpoons[e_{.0793}, s_{.0421}, s_{.0783}, s_{.0467}, s_{.1430}]{0000467} s_{.1430}$	
295	r_1223	porphobilinogen synthase	$2 s_{.0345} \xrightleftharpoons[e_{.0134}, s_{.0345}, s_{.1493}]{0000176} s_{.1493}$	0000176
296	r_1224	prephenate dehydratase	$s_{.1497} \xrightleftharpoons[e_{.0825}, s_{.1497}, s_{.0543}, s_{.1429}]{0000468} s_{.0543} + s_{.1429}$	0000176
297	r_1225	prephenate dehydrogenase	$s_{.1333} + s_{.1497} \xrightleftharpoons[e_{.0826}, s_{.1333}, s_{.1497}, s_{.0262}, s_{.0543}, s_{.1334}]{0000176} s_{.0262} + s_{.0543} + s_{.1334}$	
298	r_1230	protoporphyrinogen oxidase (aerobic)	$1 \cdot 5 s_{.1372} + s_{.1512} \xrightleftharpoons[e_{.1205}, s_{.1372}, s_{.1512}, s_{.1511}]{0000176}$	0000176
299	r_1232	purine-nucleoside phosphorylase (Adenosine)	$s_{.0405} + s_{.0445} \xrightleftharpoons[e_{.1367}, s_{.0405}, s_{.0445}, s_{.0408}, s_{.1430}]{0000468} s_{.1430}$	0000468
300	r_1245	Pyridoxine 5'-phosphate synthase	$s_{.0116} + s_{.1333} \xrightleftharpoons[e_{.0818}, e_{.0022}, s_{.0116}, s_{.1333}, s_{.1362}, s_{.0543}, s_{.1334}, s_{.1530}, s_{.1430}]{0000176} s_{.1362} + s_{.1334} + s_{.1530} + s_{.1430}$	0000176
301	r_1250	pyrroline-5-carboxylate reductase	$s_{.0128} + s_{.1336} \xrightleftharpoons[e_{.0137}, s_{.0128}, s_{.1336}, s_{.1335}, s_{.1155}]{00001765} s_{.1155}$	00001765
302	r_1251	pyruvate dehydrogenase	$s_{.0555} + s_{.1333} \xrightleftharpoons[e_{.0052}, e_{.0051}, e_{.0053}, s_{.0555}, s_{.1333}, s_{.1531}, s_{.0395}, s_{.0543}, s_{.1334}]{0000176} s_{.0543} + s_{.1334}$	0000176

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303	r_1252	pyruvate formate lyase	$s_{.0555} + s_{.1531} \xrightleftharpoons[e_{.0974}, e_{.1238}, e_{.1239}, e_{.0323}, e_{.0324}, e_{.0821}, s_{.0555}, s_{.1531}, s_{.0867}]{0000176}$	
304	r_1255	pyruvate synthase	$s_{.0555} + s_{.1531} \xrightleftharpoons[e_{.0451}, e_{.0238}, e_{.0911}, s_{.0555}, s_{.0862}, s_{.1531}, s_{.0395}, s_{.0543}, s_{.0861}]{0000176} 2s_{.0862} + s_{.0543} + 2s_{.0861}$	
305	r_1259	quinolinate synthase	$s_{.0772} + s_{.1005} \xrightleftharpoons[e_{.0260}, s_{.0772}, s_{.1005}, s_{.1430}, s_{.1537}]{0000176} 00001760 + s_{.1537}$	
306	r_1264	riboflavin kinase	$s_{.0467} + s_{.1546} \xrightleftharpoons[e_{.0008}, s_{.0467}, s_{.1546}, s_{.0421}, s_{.0863}]{00004761} 00004761 + s_{.0863}$	
307	r_1265	riboflavin synthase	$s_{.0311} + s_{.0255} \xrightleftharpoons[e_{.0531}, s_{.0311}, s_{.0255}, s_{.0364}, s_{.1430}]{00003764} 00003764 + s_{.1430}$	
308	r_1266	riboflavin synthase	$2s_{.0364} \xrightleftharpoons[e_{.0145}, s_{.0364}, s_{.0311}, s_{.1546}]{0000176} s_{.0311} + 0000176 s_{.1546}$	
309	r_1276	ribonucleoside-triphosphate reductase (ATP) (flavodoxin)	$s_{.0467} + 2s_{.0861} \xrightleftharpoons[e_{.1335}, e_{.1227}, e_{.1334}, e_{.0238}, e_{.0911}, s_{.0467}, s_{.0861}, s_{.0726}, s_{.0862}]{0000176}$	
310	r_1277	ribonucleoside-triphosphate reductase (CTP) (flavodoxin)	$s_{.0575} + 2s_{.0861} \xrightleftharpoons[e_{.1335}, e_{.1227}, e_{.1334}, e_{.0238}, e_{.0911}, s_{.0575}, s_{.0861}, s_{.0731}, s_{.0862}]{0000176}$	
311	r_1278	ribonucleoside-triphosphate reductase (GTP) (flavodoxin)	$2s_{.0861} + s_{.0945} \xrightleftharpoons[e_{.1335}, e_{.1227}, e_{.1334}, e_{.0238}, e_{.0911}, s_{.0861}, s_{.0945}, s_{.0760}, s_{.0862}]{0000176}$	
312	r_1279	ribonucleoside-triphosphate reductase (UTP) (flavodoxin)	$2s_{.0861} + s_{.1792} \xrightleftharpoons[e_{.1335}, e_{.1227}, e_{.1334}, e_{.0238}, e_{.0911}, s_{.0861}, s_{.1792}, s_{.0810}, s_{.0862}]{0000176}$	
313	r_1284	ribose-5-phosphate isomerase	$s_{.0704} \xrightleftharpoons[e_{.0919}, e_{.1291}, s_{.0704}, s_{.0446}]{0000176} s_{.0446}$	0000176
314	r_1285	ribulose 5-phosphate 3-epimerase	$s_{.0721} \xrightleftharpoons[e_{.1355}, e_{.1026}, s_{.0721}, s_{.0704}]{0000176} s_{.0704}$	0000176

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315	r_1288	S-adenosylhomocysteine nucleosidase	s_1551 $\xrightleftharpoons{e_0074, s_1551, s_0405, s_1558}$ s_0405 s_1558	+ 0000176
316	r_1291	S-ribosylhomocysteine cleavage enzyme	s_1558 $\xrightleftharpoons{e_0839, s_1558, s_0310, s_1112}$ s_0310 s_1112	+ 0000176
317	r_1301	serine O-acetyltransferase	s_0395 + s_1170 $\xrightleftharpoons{e_1105, s_0395, s_1170, s_1358, s_0555}$ 0000176 + s_0555	
318	r_1304	shikimate dehydrogenase	s_0270 + s_1336 $\xrightleftharpoons{e_1010, e_0540, s_0270, s_1336, s_1335, s_1571}$ 0000176 = s_1335 + s_1571	
319	r_1305	shikimate kinase	s_0467 + s_1571 $\xrightleftharpoons{e_1028, e_0138, s_0467, s_1571, s_0421, s_1574}$ 0000176 = s_0421 + s_1574	
320	r_1306	sirohydrochlorin dehydrogenase (NAD)	s_0768 + s_1333 $\xrightleftharpoons{e_1019, s_0768, s_1333, s_1334, s_1578}$ 0000176 + s_1578	
321	r_1307	sirohydrochlorin ferrochelatase	s_0838 + s_1578 $\xrightleftharpoons{e_1019, s_0838, s_1578, s_1577}$ s_1570 0000176	
322	r_1315	succinyl-CoA synthetase (ADP-forming)	s_0467 + s_0555 $\xrightleftharpoons{e_0253, e_0254, s_0467, s_0555, s_1595, s_0421, s_1430, s_1599}$ s_1595 $\xrightleftharpoons{s_0421 + s_1430 + s_1599}$ s_0421 +	0000176
323	r_1316	succinyl-diaminopimelate desuccinylase	s_1316 $\xrightleftharpoons{e_0774, s_1316, s_1211, s_1595}$ s_1211 + 0000176 s_1595	
324	r_1318	succinyl-diaminopimelate transaminase	s_1095 + s_1315 $\xrightleftharpoons{e_1014, s_1095, s_1315, s_0233, s_1316}$ 0000276 + s_1316	
325	r_1329	Sulfate adenyltransferase	s_0467 + s_0945 $\xrightleftharpoons{e_0869, e_0870, s_0467, s_0945, s_1609, s_0412, s_0896, s_1430, s_0783}$ s_1609 $\xrightleftharpoons{s_04896 + s_1430 + s_0783}$ s_04	0000176

Nº	Id	Name	Reaction Equation	SBO
326	r_1330	sulfite reductase (NADPH2)	$3 \text{s_1336} + \text{s_1612} \xrightleftharpoons[\text{0000176}]{\text{e_0872, e_0873, s_1336, s_1612, s_0994, s_1335}} \text{s_0994} + 3 \text{s_1335}$	
327	r_1335	tartronate semialdehyde reductase	$\text{s_0214} + \text{s_1334} \xrightleftharpoons[\text{0000176}]{\text{e_0979, e_0177, s_0214, s_1334, s_0029, s_1333}} \text{s_0029} + \text{s_1333}$	
328	r_1337	Tetraacyldisaccharide 4'kinase	$\text{s_0467} + \text{s_1204} \xrightleftharpoons[\text{00004761}]{\text{e_0330, s_0467, s_1204, s_0421, s_0147}} \text{s_0147}$	
329	r_1338	tetrahydrodipicolinate succinylase	$\text{s_1599} + \text{s_0148} \xrightleftharpoons[\text{00005765}]{\text{e_0076, s_1599, s_0148, s_0555, s_1315}} \text{s_1315}$	
330	r_1344	thiamine-phosphate diphosphorylase	$\text{s_0218} + \text{s_0330} \xrightleftharpoons[\text{00007763}]{\text{e_1253, s_0218, s_0330, s_0783, s_1643}} \text{s_1643}$	
331	r_1345	thiamine-phosphate kinase	$\text{s_0467} + \text{s_1643} \xrightleftharpoons[\text{00004761}]{\text{e_0146, s_0467, s_1643, s_0421, s_1644}} \text{s_1644}$	
332	r_1346	thiazole phosphate synthesis	$\text{s_0467} + \text{s_0738} + \text{s_0116} + \text{s_1018} + \text{s_1336} \xrightleftharpoons[\text{0000176}]{\text{e_1374, e_1250, e_0805, e_0151, e_1252, s_0467, s_0738, s_0116, s_1018, s_1136}} \text{s_0454} + \text{s_0543} + \text{s_1017} + \text{s_1335} + \text{s_0783}$	
333	r_1347	thioredoxin reductase (NADPH)	$\text{s_1336} + \text{s_1406} \xrightleftharpoons[\text{0000176}]{\text{e_1172, e_0822, e_0318, s_1336, s_1406, s_1335, s_1544}} \text{s_1335} + \text{s_1544}$	
334	r_1348	Threonine aldolase	$\text{s_1179} \xrightleftharpoons[\text{0000176}]{\text{e_0313, e_0813, s_1179, s_0381, s_0929}} \text{s_0381} + \text{s_0929}$	
335	r_1349	threonine synthase	$\text{s_1363} \xrightleftharpoons[\text{s_1430}]{\text{e_0003, s_1363, s_1430, s_1179}} \text{s_1430} + \text{s_1179}$	
336	r_1353	thymidylate synthase	$\text{s_0807} + \text{s_0336} \xrightleftharpoons[\text{00003762}]{\text{e_0894, s_0807, s_0336, s_0372, s_0802}} \text{s_0802}$	

Nº	Id	Name	Reaction Equation	SBO
337	r_1356	transaldolase	$s_{0621} + s_{0627} \xrightleftharpoons[e_{0770}, e_{0005}, s_{0621}, s_{0627}, s_{0913}, s_{1561}]{s_{0913} + s_{1561}}$	0000176
338	r_1357	transketolase	$s_{0913} + s_{1561} \xrightleftharpoons[e_{0771}, e_{0928}, s_{0913}, s_{1561}, s_{0446}, s_{0721}]{s_{0446} + s_{0721}}$	0000176
339	r_1358	transketolase	$s_{0627} + s_{0913} \xrightleftharpoons[e_{0771}, e_{0928}, s_{0627}, s_{0913}, s_{0621}, s_{0721}]{s_{0621} + s_{0721}}$	0000176
340	r_1363	triose-phosphate isomerase	$s_{0913} \xrightleftharpoons[e_{1226}, s_{0913}, s_{0772}]{s_{0772}}$	0000176
341	r_1367	tryptophan synthase (indoleglycerol phosphate)	$s_{0493} \xrightleftharpoons[e_{0425}, e_{0426}, s_{0493}, s_{0913}, s_{1009}]{s_{0913} + s_{1009}}$	0000176
342	r_1368	Tryptophanase (L-tryptophan)	$s_{1009} \xrightleftharpoons[e_{1141}, s_{1009}, s_{0451}, s_{1531}, s_{1185}]{s_{1185}} + s_{0451}$	0000176
343	r_1375	tyrosine lyase	$s_{1552} \xrightleftharpoons[e_{1251}, s_{1552}, s_{1336}, s_{1189}, s_{1407}, s_{0333}, s_{0738}, s_{1141}, s_{1335}]{s_{14}} + s_{1336}$	0000176
344	r_1376	tyrosine transaminase	$s_{0262} + s_{1095} \xrightleftharpoons[e_{1276}, e_{0332}, s_{0262}, s_{1095}, s_{0233}, s_{1189}]{s_{0233} + s_{1189}}$	0000176
345	r_1378	UDP-3-O-(3-hydroxymyristoyl)glucosamine acyltransferase	$s_{0028} + s_{1735} \xrightleftharpoons[e_{0081}, s_{0028}, s_{1735}, s_{0397}, s_{1734}]{s_{1734}}$	00003767
346	r_1379	UDP-3-O-acetylglucosamine deacetylase	$s_{1736} \xrightleftharpoons[e_{0044}, s_{1736}, s_{0384}, s_{1735}]{s_{0384} + s_{1735}}$	0000176
347	r_1388	UDP-N-acetylenolpyruvoylg glucosamine reductase	$s_{1336} + s_{1742} \xrightleftharpoons[e_{1248}, s_{1336}, s_{1742}, s_{1335}, s_{1750}]{s_{1750}}$	00001765

Nº	Id	Name		Reaction Equation	SBO
348	r_1389	UDP-N-acetylglucosamine carboxyvinyltransferase	1-	s_1484 + s_1745 $\xrightleftharpoons[e_0991, s_1484, s_1745, s_1430, s_1742]{}$ s_1742	000014760+
349	r_1391	UDP-N-acetylglucosamine acyltransferase		s_0028 + s_1745 $\xrightleftharpoons[e_0375, e_0083, s_0028, s_1745, s_0397, s_1736]{}$ s_0397 + s_1736	0000176
350	r_1392	UDP-N-acetylglucosamine diphosphorylase		s_1287 + s_1792 $\xrightleftharpoons[e_1150, s_1287, s_1792, s_0783, s_1745]{}$ s_1745	00000783+
351	r_1393	UDP-N-acetylglucosamine- N-acetylmuramyl- (pentapeptide)pyrophosphoryl-undecaprenol N-acetylglucosamine transferase		s_1745 + s_1777 $\xrightleftharpoons[e_0041, s_1745, s_1777, s_1776, s_1733]{}$ s_1733	000017766+
352	r_1397	UDP-N-acetylmuramoyl-L-alanine thetase	syn-	s_1041 + s_0467 $\xrightleftharpoons[s_1750]{e_0042, s_1041, s_0467, s_1750, s_0421, s_1430, s_1751}$ s_0421 + s_1430 + s_1751	0000176
353	r_1399	UDP-N-acetylmuramoyl-L-alanyl-D-glutamate synthetase		s_0467 + s_0671 $\xrightleftharpoons[s_1751]{e_0040, s_0467, s_0671, s_1751, s_0421, s_1430, s_1754}$ s_0421 + s_1430 + s_1754	0000176
354	r_1400	UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimelate thetase	syn-	s_1242 + s_0467 $\xrightleftharpoons[s_1754]{e_0037, s_1242, s_0467, s_1754, s_0421, s_1430, s_1752}$ s_0421 + s_1430 + s_1752	0000176
355	r_1401	UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine synthetase		s_0603 + s_0467 $\xrightleftharpoons[s_1752]{e_0038, s_0603, s_0467, s_1752, s_0421, s_1430, s_1755}$ s_0421 + s_1430 + s_1755	0000176
356	r_1402	UDP-sugar hydrolase		s_1734 $\xrightleftharpoons[e_0186, s_1734, s_0149, s_1762]{s_0149}$ + s_1762	0000176

Nº	Id	Name	Reaction Equation	SBO
357	r_1409	UMP kinase	$s_{0467} + s_{1762} \xrightleftharpoons[e_{0328}, e_{0077}, s_{0467}, s_{1762}, s_{0421}, s_{1733}]{0000176} s_{0421} + s_{1733}$	
358	r_1410	Undecaprenyl diphosphate synthase	$s_{0826} + 8 s_{1028} \xrightleftharpoons[e_{0079}, s_{0826}, s_{1028}, s_{0783}, s_{1765}]{0000176} s_{0783} + s_{1765}$	
359	r_1413	undecaprenyl-diphosphatase	$s_{1765} \xrightleftharpoons[e_{0962}, e_{0433}, e_{0300}, s_{1765}, s_{1430}, s_{1768}]{0000176} s_{1768}$	
360	r_1421	uroporphyrinogen decarboxylase (uroporphyrinogen III)	$s_{1791} \xrightleftharpoons[e_{1256}, s_{1791}, s_{0543}, s_{0565}]{4} s_{0543} + 0000176 s_{0565}$	
361	r_1422	uroporphyrinogen methyltransferase	$2 s_{1552} + s_{1791} \xrightleftharpoons[e_{1184}, e_{1019}, s_{1552}, s_{1791}, s_{1551}, s_{0768}]{0000176} 2 s_{1551} + s_{0768}$	
362	r_1423	uroporphyrinogen-III synthase	$s_{0998} \xrightleftharpoons[e_{1185}, s_{0998}, s_{1791}]{s_{1791}} 0000176$	
363	r_1425	valine transaminase	$s_{0282} + s_{1095} \xrightleftharpoons[e_{1167}, s_{0282}, s_{1095}, s_{0233}, s_{1193}]{0000276} s_{1193}$	
364	r_1432	xylose isomerase	$s_{0657} \xrightleftharpoons[e_{1086}, s_{0657}, s_{0622}]{s_{0622}} 0000176$	
365	r_1511	ammonia transport via diffusion (extracellular to periplasm)	$s_{0453} \xrightleftharpoons[s_{0453}, s_{0451}]{s_{0451}} 0000185$	
366	r_1521	ATP synthase (four protons for one ATP) (periplasm)	$s_{0421} + s_{1430} \xrightleftharpoons[s_{0421}, s_{1430}, s_{0467}]{s_{0467}} 0000176$	
367	r_1536	calcium (Ca+2) transport via diffusion (extracellular to periplasm)	$s_{0499} \xrightleftharpoons[s_{0499}, s_{0497}]{s_{0497}} 0000185$	
368	r_1543	chloride (Cl-1) transport via diffusion (extracellular to periplasm)	$s_{0522} \xrightleftharpoons[s_{0522}, s_{0520}]{s_{0520}} 0000185$	

Nº	Id	Name	Reaction Equation	SBO
369	r_1551	CO2 transport via diffusion (extracellular to periplasm)	s_0543 $\xrightarrow{s_0543}$ s_0545	0000185
370	r_1557	cobalt (Co+2) transport via diffusion (extracellular to periplasm)	s_0548 $\xrightleftharpoons{s_0548, s_0546}$ s_0546	0000185
371	r_1565	copper (Cu+2) transport via diffusion (extracellular to periplasm)	s_0581 $\xrightleftharpoons{s_0581, s_0579}$ s_0579	0000185
372	r_1581	cytochrome oxidase bd (menaquinol-8: 2 protons) (periplasm)	s_1239 + 0 · 5 s_1372 $\xrightleftharpoons{s_1239, s_1372, s_1240}$ s_1240	0000176
373	r_1582	cytochrome oxidase bd (ubiquinol-8: 2 protons) (periplasm)	0 · 5 s_1372 + s_1731 $\xrightleftharpoons{s_1372, s_1731, s_1732}$ s_1732	0000176
374	r_1621	D-glucose transport via diffusion (extracellular to periplasm) irreversible	s_0659 $\xrightleftharpoons{s_0659, s_0657}$ s_0657	0000185
375	r_1622	D-glucose transport via PEP:Pyr PTS (periplasm)	s_1484 + s_0657 $\xrightleftharpoons{s_1484, s_0657, s_0663, s_1531}$ s_0660000176 s_1531	0000176
376	r_1714	Fructose transport via PEP:Pyr PTS (f6p generating) (periplasm)	s_1484 + s_0622 $\xrightleftharpoons{s_1484, s_0622, s_0627, s_1531}$ s_0620000176 s_1531	0000176
377	r_1792	iron (II) transport via diffusion (extracellular to periplasm)	s_0840 $\xrightleftharpoons{s_0840, s_0838}$ s_0838	0000185
378	r_1793	iron (III) transport via diffusion (extracellular to periplasm)	s_0843 $\xrightleftharpoons{s_0843, s_0841}$ s_0841	0000185
379	r_1906	magnesium (Mg+2) transport via diffusion (extracellular to periplasm)	s_1214 $\xrightleftharpoons{s_1214, s_1212}$ s_1212	0000185

Nº	Id	Name	Reaction Equation	SBO
380	r_1923	Manganese (Mn+2) transport via diffusion (extracellular to periplasm)	s_1257 $\xrightleftharpoons{s_{_1255}}$ s_1255	0000185
381	r_1939	Methanol transport via diffusion (extracellular to periplasm)	s_1248 $\xrightarrow{s_{_1248}}$ s_1250	0000185
382	r_1943	molybdate transport via diffusion (extracellular to periplasm)	s_1263 $\xrightleftharpoons{s_{_1261}}$ s_1261	0000185
383	r_1944	murein polymerizing transglycosylase	2 s_1776 $\xrightleftharpoons{s_{_1765}, s_{_1725}}$ 2 s_1765 + s_1725	0000176
384	r_1962	NAD(P) transhydrogenase (periplasm)	s_1334 + s_1335 $\xrightleftharpoons{s_{_1334}, s_{_1335}, s_{_1333}, s_{_1336}}$ s_1330	0000176
385	r_1968	nickel transport via diffusion (extracellular to periplasm)	s_1331 $\xrightleftharpoons{s_{_1329}}$ s_1329	0000185
386	r_2002	oxygen transport via diffusion (extracellular to periplasm)	s_1374 $\xrightleftharpoons{s_{_1374}, s_{_1372}}$ s_1372	0000185
387	r_2011	phosphate transport via diffusion (extracellular to periplasm)	s_1432 $\xrightleftharpoons{s_{_1430}}$ s_1430	0000185
388	r_2047	potassium transport via diffusion (extracellular to periplasm)	s_1496 $\xrightleftharpoons{s_{_1494}}$ s_1494	0000185
389	r_2108	sulfate transport via diffusion (extracellular to periplasm)	s_1611 $\xrightleftharpoons{s_{_1609}}$ s_1609	0000185
390	r_2167	zinc (Zn+2) transport via diffusion (extracellular to periplasm)	s_1806 $\xrightleftharpoons{s_{_1804}}$ s_1804	0000185

Nº	Id	Name	Reaction Equation	SBO
391	r_2195	2-Octaprenylphenol hydroxylase (anaerobic)	s_0229 + s_0229, s_0467, s_1333, s_0226, s_0421, s_1334, s_1430 → 2 s_0467 + s_0226 + 2 s_0421 + s_1334 + 2 s_1430	0000176
392	r_2310	Dihydronicopterin monophosphate dephosphorylase	s_0766 ⇌ s_0766, s_0765, s_1430 → s_0765 + s_1430	0000176
393	r_2519	pyridoxine 5'-phosphate oxidase (anaerobic)	s_1333 + s_1530 ⇌ s_1333, s_1530, s_1334, s_1522 → s_1334, s_1522	0000176
394	r_2521	pyrimidine phosphatase	s_0346 ⇌ s_0346, s_0311, s_1430 → s_0311 + s_1430	0000176
395	r_2533	Sink needed to allow (2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran to leave system	s_0003 → s_1807	0000185
396	r_2534	Sink needed to allow 5'-deoxyribose to leave system	s_0334 → s_0334 → s_1835	0000185
397	r_2537	Sink needed to allow p-Cresol to leave system	s_1407 → s_1407 → s_2072	0000185
398	r_2538	Sink needed to allow S-Adenosyl-4-methylthio-2-oxobutanoate to leave system	s_1550 → s_1550 → s_2093	0000185

Nº	Id	Name	Reaction Equation				SBO
399	r_2584	growth	$2.23 \cdot 10^{-4} s_{_0133}$	+	$2.6 \cdot 10^{-5} s_{_0378}$	+	0000176
			$2.23 \cdot 10^{-4} s_{_0226}$	+	$2.6 \cdot 10^{-4} s_{_0380}$	+	
			$0 \cdot 5137 s_{_1041}$	+	$2.23 \cdot 10^{-4} s_{_1552}$	+	
			$0 \cdot 2958 s_{_1061}$	+	$0 \cdot 2411 s_{_1068}$	+	
			$0 \cdot 2411 s_{_1072}$	+	$54 \cdot 12 s_{_0467}$	+	
			$1.22 \cdot 10^{-4} s_{_0480}$	+	$2 \cdot 10^{-6} s_{_0476}$	+	
			$0 \cdot 005205 s_{_0497}$	+	$0 \cdot 005205 s_{_0520}$	+	
			$5.76 \cdot 10^{-4} s_{_0555}$	+	$2.5 \cdot 10^{-5} s_{_0546}$	+	
			$0 \cdot 1335 s_{_0575}$	+	$7.09 \cdot 10^{-4} s_{_0579}$	+	
			$0 \cdot 09158 s_{_1083}$	+	$0 \cdot 02617 s_{_0726}$	+	
			$0 \cdot 02702 s_{_0731}$	+	$0 \cdot 02702 s_{_0760}$	+	
			$0 \cdot 02617 s_{_0805}$	+	$2.23 \cdot 10^{-4} s_{_0859}$	+	
			$0 \cdot 006715 s_{_0838}$	+	$0 \cdot 007808 s_{_0841}$	+	
			$0 \cdot 2632 s_{_1101}$	+	$0 \cdot 2632 s_{_1095}$	+	
			$0 \cdot 6126 s_{_0929}$	+	$0 \cdot 2151 s_{_0945}$	+	
			$0 \cdot 09474 s_{_1106}$	+	$0 \cdot 2905 s_{_1119}$	+	
			$0 \cdot 1952 s_{_1494}$	+	$0 \cdot 4505 s_{_1127}$	+	
			$0 \cdot 3432 s_{_1131}$	+	$0 \cdot 1537 s_{_1141}$	+	
			$0 \cdot 008675 s_{_1212}$	+	$2.23 \cdot 10^{-4} s_{_0336}$	+	
			$6.91 \cdot 10^{-4} s_{_1255}$	+	$7 \cdot 10^{-6} s_{_1261}$	+	
			$0 \cdot 001831 s_{_1333}$	+	$4.47 \cdot 10^{-4} s_{_1335}$	+	
			$0 \cdot 01301 s_{_0451}$	+	$3.23 \cdot 10^{-4} s_{_1329}$	+	
			$0 \cdot 06382 s_{_1437}$	+	$0 \cdot 07521 s_{_1435}$	+	
			$0 \cdot 1853 s_{_1151}$	+	$2.23 \cdot 10^{-4} s_{_1508}$	+	
			$0 \cdot 2211 s_{_1155}$	+	$2.23 \cdot 10^{-4} s_{_1522}$	+	
			$2.23 \cdot 10^{-4} s_{_1546}$	+	$0 \cdot 2158 s_{_1170}$	+	
			$2.23 \cdot 10^{-4} s_{_1577}$	+	$0 \cdot 004338 s_{_1609}$	+	
			$2.23 \cdot 10^{-4} s_{_0337}$	+	$2.23 \cdot 10^{-4} s_{_1644}$	+	
			$0 \cdot 2537 s_{_1179}$	+	$0 \cdot 05684 s_{_1185}$	+	
			$0 \cdot 1379 s_{_1189}$	+	$5.5 \cdot 10^{-5} s_{_1765}$	+	
			$0 \cdot 1441 s_{_1792}$	+	$0 \cdot 4232 s_{_1193}$	+	
			$3.41 \cdot 10^{-4} s_{_1804}$	+	$0 \cdot 01946 s_{_1033}$	+	
			$0 \cdot 01389 s_{_1719}$	<u>s_{_0133}, s_{_0378}, s_{_0226}, s_{_0380}, s_{_1041}, s_{_1552}, s_{_1061}, s_{_1068}, s_{_1}</u>			
					$53 \cdot 95 s_{_1430} + 0 \cdot 7739 s_{_0783}$		

Nº	Id	Name	Reaction Equation	SBO
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7.1 Reaction r_0001

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name (2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran synthesis (spontaneous)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 6: Properties of each reactant.

Id	Name	SBO
s_0004	(2R,4S)-2-methyl-2,4-dihydroxydihydrofuran-3-one	

Modifiers

Table 7: Properties of each modifier.

Id	Name	SBO
s_0004	(2R,4S)-2-methyl-2,4-dihydroxydihydrofuran-3-one	
s_0003	(2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran	

Product

Table 8: Properties of each product.

Id	Name	SBO
s_0003	(2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran	

Kinetic Law

Derived unit contains undeclared units

$$v_1 = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0004} \cdot \left(\frac{[s_{\text{0004}}]}{\text{ic0004}} \right) + \text{ep0003} \cdot \left(\frac{[s_{\text{0003}}]}{\text{ic0003}} \right) \right) \quad (3)$$

Table 9: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0004			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0003			-1.000	dimensionless	<input checked="" type="checkbox"/>

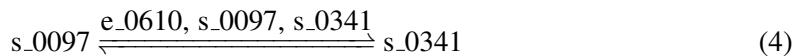
7.2 Reaction r_0008

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name 1-(5-phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino]imidazole-4-carboxamide isomerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 10: Properties of each reactant.

Id	Name	SBO
s_0097	1-(5-Phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino]imidazole-4-carboxamide	

Modifiers

Table 11: Properties of each modifier.

Id	Name	SBO
e_0610	hisA	
s_0097	1-(5-Phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino]imidazole-4-carboxamide	
s_0341	5-[(5-phospho-1-deoxyribulos-1-ylamino)methylideneamino]-1-(5-phosphoribosyl)imidazole-4-carboxamide	

Product

Table 12: Properties of each product.

Id	Name
s_0341	5-[(5-phospho-1-deoxyribulos-1-ylamino)methylideneamino]-1-(5-phosphoribosyl)imidazole-4-carboxylic acid

Kinetic Law

Derived unit contains undeclared units

$$v_2 = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0097 \cdot \left(\frac{[\text{s_0097}]}{\text{ic}0097} \right) + \text{ep}0341 \cdot \left(\frac{[\text{s_0341}]}{\text{ic}0341} \right) \right) \quad (5)$$

Table 13: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0097			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0341			-1.000	dimensionless	<input checked="" type="checkbox"/>

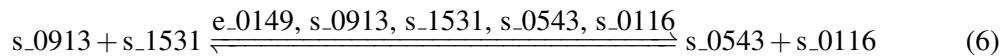
7.3 Reaction r_0009

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 1-deoxy-D-xylulose 5-phosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 14: Properties of each reactant.

Id	Name	SBO
s_0913	Glyceraldehyde 3-phosphate	
s_1531	Pyruvate	

Modifiers

Table 15: Properties of each modifier.

Id	Name	SBO
e_0149	dxs	0000460
s_0913	Glyceraldehyde 3-phosphate	
s_1531	Pyruvate	
s_0543	CO2	
s_0116	1-deoxy-D-xylulose 5-phosphate	

Products

Table 16: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_0116	1-deoxy-D-xylulose 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_3 = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0913} \cdot \left(\frac{[\text{s}_0913]}{\text{ic0913}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s}_1531]}{\text{ic1531}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s}_0543]}{\text{ic0543}} \right) + \text{ep0116} \cdot \left(\frac{[\text{s}_0116]}{\text{ic0116}} \right) \right) \quad (7)$$

Table 17: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.92694941408386 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.92694941408386 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0913			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0116			-1.000	dimensionless	<input checked="" type="checkbox"/>

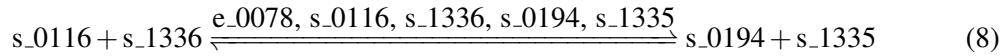
7.4 Reaction r_0011

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 1-deoxy-D-xylulose reductoisomerase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 18: Properties of each reactant.

Id	Name	SBO
s_{_0116}	1-deoxy-D-xylulose 5-phosphate	
s_{_1336}	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 19: Properties of each modifier.

Id	Name	SBO
e_{_0078}	dxr	0000460
s_{_0116}	1-deoxy-D-xylulose 5-phosphate	
s_{_1336}	Nicotinamide adenine dinucleotide phosphate - reduced	
s_{_0194}	2-C-methyl-D-erythritol 4-phosphate	
s_{_1335}	Nicotinamide adenine dinucleotide phosphate	

Products

Table 20: Properties of each product.

Id	Name	SBO
s_{_0194}	2-C-methyl-D-erythritol 4-phosphate	
s_{_1335}	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_4 = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0116} \cdot \left(\frac{[s_{_0116}]}{\text{ic0116}} \right) + \text{ep1336} \cdot \left(\frac{[s_{_1336}]}{\text{ic1336}} \right) + \text{ep0194} \cdot \left(\frac{[s_{_0194}]}{\text{ic0194}} \right) + \text{ep1335} \cdot \left(\frac{[s_{_1335}]}{\text{ic1335}} \right) \right) \quad (9)$$

Table 21: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0116			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0194			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

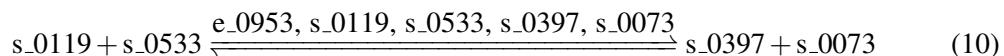
7.5 Reaction r_0012

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 1-hexadec-7-enoyl-sn-glycerol 3-phosphate O-acyltransferase (n-C16:1)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 22: Properties of each reactant.

Id	Name	SBO
s_0119	1-hexadec-9-enoyl-sn-glycerol 3-phosphate	
s_0533	cis-hexadec-9-enoyl-[acyl-carrier protein] (n-C16:1)	

Modifiers

Table 23: Properties of each modifier.

Id	Name	SBO
e_0953	plsC	0000460
s_0119	1-hexadec-9-enoyl-sn-glycerol 3-phosphate	
s_0533	cis-hexadec-9-enoyl-[acyl-carrier protein] (n-C16:1)	
s_0397	acyl carrier protein	
s_0073	1,2-dihexadec-9-enoyl-sn-glycerol 3-phosphate	

Products

Table 24: Properties of each product.

Id	Name	SBO
s_0397	acyl carrier protein	
s_0073	1,2-dihexadec-9-enoyl-sn-glycerol 3-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_5 = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0119} \cdot \left(\frac{[\text{s_0119}]}{\text{ic0119}} \right) + \text{ep0533} \cdot \left(\frac{[\text{s_0533}]}{\text{ic0533}} \right) + \text{ep0397} \cdot \left(\frac{[\text{s_0397}]}{\text{ic0397}} \right) + \text{ep0073} \cdot \left(\frac{[\text{s_0073}]}{\text{ic0073}} \right) \right) \quad (11)$$

Table 25: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0119			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0533			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0073			-1.000	dimensionless	<input checked="" type="checkbox"/>

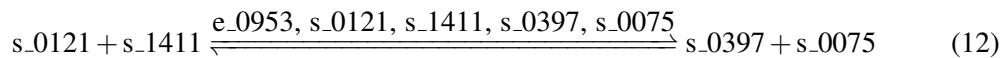
7.6 Reaction r_0013

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 1-hexadecanoyl-sn-glycerol 3-phosphate O-acyltransferase (n-C16:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 26: Properties of each reactant.

Id	Name	SBO
s_0121	1-hexadecanoyl-sn-glycerol 3-phosphate	
s_1411	Palmitoyl-ACP (n-C16:0ACP)	

Modifiers

Table 27: Properties of each modifier.

Id	Name	SBO
e_0953	plsC	0000460
s_0121	1-hexadecanoyl-sn-glycerol 3-phosphate	
s_1411	Palmitoyl-ACP (n-C16:0ACP)	
s_0397	acyl carrier protein	
s_0075	1,2-dihexadecanoyl-sn-glycerol 3-phosphate	

Products

Table 28: Properties of each product.

Id	Name	SBO
s_0397	acyl carrier protein	
s_0075	1,2-dihexadecanoyl-sn-glycerol 3-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_6 = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0121 \cdot \left(\frac{[\text{s}_0121]}{\text{ic}0121} \right) + \text{ep}1411 \cdot \left(\frac{[\text{s}_1411]}{\text{ic}1411} \right) + \text{ep}0397 \cdot \left(\frac{[\text{s}_0397]}{\text{ic}0397} \right) + \text{ep}0075 \cdot \left(\frac{[\text{s}_0075]}{\text{ic}0075} \right) \right) \quad (13)$$

Table 29: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0121			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1411			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0075			-1.000	dimensionless	<input checked="" type="checkbox"/>

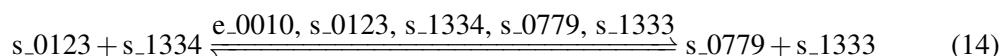
7.7 Reaction r_0014

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate reductase (dmpp)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 30: Properties of each reactant.

Id	Name	SBO
s_0123	1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 31: Properties of each modifier.

Id	Name	SBO
e_0010	ispH	0000460
s_0123	1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0779	Dimethylallyl diphosphate	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 32: Properties of each product.

Id	Name	SBO
s_0779	Dimethylallyl diphosphate	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_7 = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0123 \cdot \left(\frac{[\text{s_0123}]}{\text{ic0123}} \right) + \text{ep}1334 \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep}0779 \cdot \left(\frac{[\text{s_0779}]}{\text{ic0779}} \right) + \text{ep}1333 \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) \right) \quad (15)$$

Table 33: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.85076520790662 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.85076520790662 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0123			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0779			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

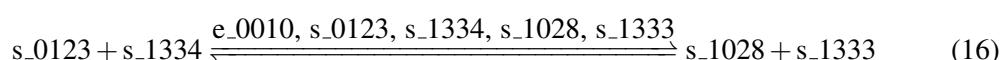
7.8 Reaction r_0015

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate reductase (ipdp)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 34: Properties of each reactant.

Id	Name	SBO
s_0123	1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 35: Properties of each modifier.

Id	Name	SBO
e_0010	ispH	0000460
s_0123	1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1028	Isopentenyl diphosphate	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 36: Properties of each product.

Id	Name	SBO
s_1028	Isopentenyl diphosphate	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_8 = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0123 \cdot \left(\frac{[\text{s}_0123]}{\text{ic}0123} \right) + \text{ep}1334 \cdot \left(\frac{[\text{s}_1334]}{\text{ic}1334} \right) + \text{ep}1028 \cdot \left(\frac{[\text{s}_1028]}{\text{ic}1028} \right) + \text{ep}1333 \cdot \left(\frac{[\text{s}_1333]}{\text{ic}1333} \right) \right) \quad (17)$$

Table 37: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.92408825885483 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.92408825885483 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0123			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1028			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

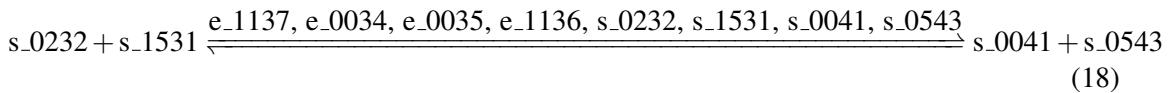
7.9 Reaction r_0038

This is a reversible reaction of two reactants forming two products influenced by eight modifiers.

Name 2-aceto-2-hydroxybutanoate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 38: Properties of each reactant.

Id	Name	SBO
s_0232	2-Oxobutanoate	
s_1531	Pyruvate	

Modifiers

Table 39: Properties of each modifier.

Id	Name	SBO
e_1137	ilvB	0000460
e_0034	ilvI	0000460
e_0035	ilvH	0000460
e_1136	ilvN	0000460
s_0232	2-Oxobutanoate	
s_1531	Pyruvate	
s_0041	(S)-2-Aceto-2-hydroxybutanoate	
s_0543	CO2	

Products

Table 40: Properties of each product.

Id	Name	SBO
s_0041	(S)-2-Aceto-2-hydroxybutanoate	
s_0543	CO2	

Kinetic Law

Derived unit contains undeclared units

$$v_9 = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0232} \cdot \left(\frac{[\text{s_0232}]}{\text{ic0232}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s_1531}]}{\text{ic1531}} \right) + \text{ep0041} \cdot \left(\frac{[\text{s_0041}]}{\text{ic0041}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) \right) \quad (19)$$

Table 41: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0232			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0041			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

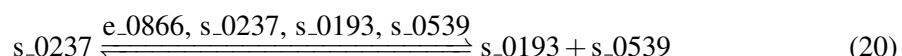
7.10 Reaction r_0053

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name 2-C-methyl-D-erythritol 2,4-cyclodiphosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 42: Properties of each reactant.

Id	Name	SBO
s_0237	2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	

Modifiers

Table 43: Properties of each modifier.

Id	Name	SBO
e_0866	ispF	0000460
s_0237	2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	
s_0193	2-C-methyl-D-erythritol 2,4-cyclodiphosphate	
s_0539	CMP	

Products

Table 44: Properties of each product.

Id	Name	SBO
s_0193	2-C-methyl-D-erythritol 2,4-cyclodiphosphate	
s_0539	CMP	

Kinetic Law

Derived unit contains undeclared units

$$v_{10} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0237 \cdot \left(\frac{[\text{s}_0237]}{\text{ic}0237} \right) + \text{ep}0193 \cdot \left(\frac{[\text{s}_0193]}{\text{ic}0193} \right) + \text{ep}0539 \cdot \left(\frac{[\text{s}_0539]}{\text{ic}0539} \right) \right) \quad (21)$$

Table 45: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0237			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0193			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0539			-1.000	dimensionless	<input checked="" type="checkbox"/>

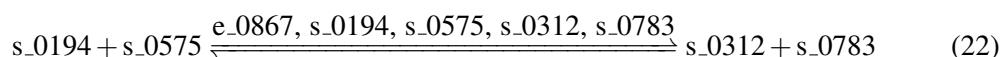
7.11 Reaction r_0054

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 2-C-methyl-D-erythritol 4-phosphate cytidylyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 46: Properties of each reactant.

Id	Name	SBO
s_0194	2-C-methyl-D-erythritol 4-phosphate	
s_0575	CTP	

Modifiers

Table 47: Properties of each modifier.

Id	Name	SBO
e_0867	ispD	0000460
s_0194	2-C-methyl-D-erythritol 4-phosphate	
s_0575	CTP	
s_0312	4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	
s_0783	Diphosphate	

Products

Table 48: Properties of each product.

Id	Name	SBO
s_0312	4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{11} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0194} \cdot \left(\frac{[\text{s_0194}]}{\text{ic0194}} \right) + \text{ep0575} \cdot \left(\frac{[\text{s_0575}]}{\text{ic0575}} \right) + \text{ep0312} \cdot \left(\frac{[\text{s_0312}]}{\text{ic0312}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (23)$$

Table 49: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0194			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0575			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0312			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

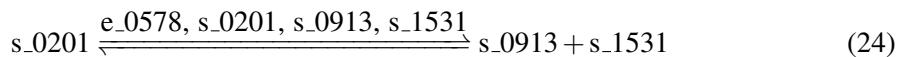
7.12 Reaction r_0056

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name 2-dehydro-3-deoxy-phosphogluconate aldolase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 50: Properties of each reactant.

Id	Name	SBO
s_0201	2-Dehydro-3-deoxy-D-gluconate 6-phosphate	

Modifiers

Table 51: Properties of each modifier.

Id	Name	SBO
e_0578	eda	0000460

Id	Name	SBO
s_0201	2-Dehydro-3-deoxy-D-gluconate 6-phosphate	
s_0913	Glyceraldehyde 3-phosphate	
s_1531	Pyruvate	

Products

Table 52: Properties of each product.

Id	Name	SBO
s_0913	Glyceraldehyde 3-phosphate	
s_1531	Pyruvate	

Kinetic Law

Derived unit contains undeclared units

$$v_{12} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0201 \cdot \left(\frac{[\text{s_0201}]}{\text{ic}0201} \right) + \text{ep}0913 \cdot \left(\frac{[\text{s_0913}]}{\text{ic}0913} \right) + \text{ep}1531 \cdot \left(\frac{[\text{s_1531}]}{\text{ic}1531} \right) \right) \quad (25)$$

Table 53: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.880	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.880	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0201			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0913			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			-1.000	dimensionless	<input checked="" type="checkbox"/>

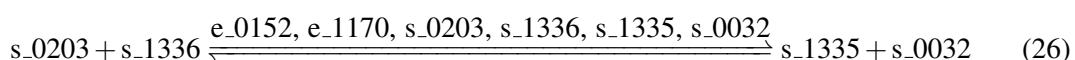
7.13 Reaction r_0063

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 2-dehydropantoate 2-reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 54: Properties of each reactant.

Id	Name	SBO
s_0203	2-Dehydropantoate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 55: Properties of each modifier.

Id	Name	SBO
e_0152	panE	0000460
e_1170	ilvC	0000460
s_0203	2-Dehydropantoate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0032	(R)-Pantoate	

Products

Table 56: Properties of each product.

Id	Name	SBO
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0032	(R)-Pantoate	

Kinetic Law

Derived unit contains undeclared units

$$v_{13} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0203 \cdot \left(\frac{[\text{s}_0203]}{\text{ic}0203} \right) + \text{ep}1336 \cdot \left(\frac{[\text{s}_1336]}{\text{ic}1336} \right) + \text{ep}1335 \cdot \left(\frac{[\text{s}_1335]}{\text{ic}1335} \right) + \text{ep}0032 \cdot \left(\frac{[\text{s}_0032]}{\text{ic}0032} \right) \right) \quad (27)$$

Table 57: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388884133 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388884133 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0203			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0032			-1.000	dimensionless	<input checked="" type="checkbox"/>

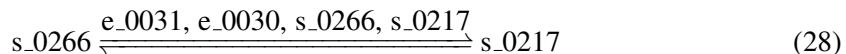
7.14 Reaction r_0066

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 2-isopropylmalate hydratase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 58: Properties of each reactant.

Id	Name	SBO
s_0266	3-Carboxy-3-hydroxy-4-methylpentanoate	

Modifiers

Table 59: Properties of each modifier.

Id	Name	SBO
e_0031	leuC	0000460
e_0030	leuD	0000460
s_0266	3-Carboxy-3-hydroxy-4-methylpentanoate	
s_0217	2-Isopropylmaleate	

Product

Table 60: Properties of each product.

Id	Name	SBO
s_0217	2-Isopropylmaleate	

Kinetic Law

Derived unit contains undeclared units

$$v_{14} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0266} \cdot \left(\frac{[\text{s_0266}]}{\text{ic0266}} \right) + \text{ep0217} \cdot \left(\frac{[\text{s_0217}]}{\text{ic0217}} \right) \right) \quad (29)$$

Table 61: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0266			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0217			-1.000	dimensionless	<input checked="" type="checkbox"/>

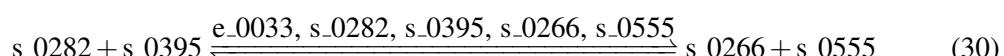
7.15 Reaction r_0067

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 2-isopropylmalate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 62: Properties of each reactant.

Id	Name	SBO
s_0282	3-Methyl-2-oxobutanoate	
s_0395	Acetyl-CoA	

Modifiers

Table 63: Properties of each modifier.

Id	Name	SBO
e_0033	leuA	0000460
s_0282	3-Methyl-2-oxobutanoate	
s_0395	Acetyl-CoA	
s_0266	3-Carboxy-3-hydroxy-4-methylpentanoate	
s_0555	Coenzyme A	

Products

Table 64: Properties of each product.

Id	Name	SBO
s_0266	3-Carboxy-3-hydroxy-4-methylpentanoate	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{15} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0282} \cdot \left(\frac{[\text{s}_0282]}{\text{ic0282}} \right) + \text{ep0395} \cdot \left(\frac{[\text{s}_0395]}{\text{ic0395}} \right) + \text{ep0266} \cdot \left(\frac{[\text{s}_0266]}{\text{ic0266}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s}_0555]}{\text{ic0555}} \right) \right) \quad (31)$$

Table 65: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0282			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0266			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

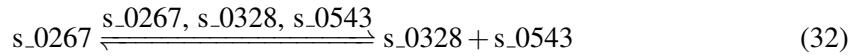
7.16 Reaction r_0078

This is a reversible reaction of one reactant forming two products influenced by three modifiers.

Name 2-Oxo-4-methyl-3-carboxypentanoate decarboxylation

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 66: Properties of each reactant.

Id	Name	SBO
s_0267	3-Carboxy-4-methyl-2-oxopentanoate	

Modifiers

Table 67: Properties of each modifier.

Id	Name	SBO
s_0267	3-Carboxy-4-methyl-2-oxopentanoate	
s_0328	4-Methyl-2-oxopentanoate	
s_0543	CO2	

Products

Table 68: Properties of each product.

Id	Name	SBO
s_0328	4-Methyl-2-oxopentanoate	
s_0543	CO2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{16} &= \text{vol}(\text{cell}) \cdot v_0 \\ &\cdot \left(1 + \text{ep0267} \cdot \left(\frac{[s_{\text{0267}}]}{\text{ic0267}} \right) + \text{ep0328} \cdot \left(\frac{[s_{\text{0328}}]}{\text{ic0328}} \right) + \text{ep0543} \cdot \left(\frac{[s_{\text{0543}}]}{\text{ic0543}} \right) \right) \end{aligned} \quad (33)$$

Table 69: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0267			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0328			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

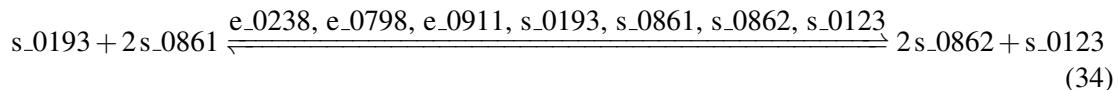
7.17 Reaction r_0084

This is a reversible reaction of two reactants forming two products influenced by seven modifiers.

Name 2C-methyl-D-erythritol 2,4 cyclodiphosphate dehydratase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 70: Properties of each reactant.

Id	Name	SBO
s_0193	2-C-methyl-D-erythritol 2,4-cyclodiphosphate	
s_0861	Flavodoxin reduced	

Modifiers

Table 71: Properties of each modifier.

Id	Name	SBO
e_0238	fldA	0000460
e_0798	ispG	0000460
e_0911	fldB	0000460
s_0193	2-C-methyl-D-erythritol 2,4-cyclodiphosphate	
s_0861	Flavodoxin reduced	
s_0862	flavodoxin semi oxidized	
s_0123	1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate	

Products

Table 72: Properties of each product.

Id	Name	SBO
s_0862	flavodoxin semi oxidized	
s_0123	1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{17} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0193} \cdot \left(\frac{[\text{s_0193}]}{\text{ic0193}} \right) + \text{ep0861} \cdot \left(\frac{[\text{s_0861}]}{\text{ic0861}} \right) + \text{ep0862} \cdot \left(\frac{[\text{s_0862}]}{\text{ic0862}} \right) + \text{ep0123} \cdot \left(\frac{[\text{s_0123}]}{\text{ic0123}} \right) \right) \quad (35)$$

Table 73: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0193			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0861			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0862			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep0123			-1.000	dimensionless	<input checked="" type="checkbox"/>

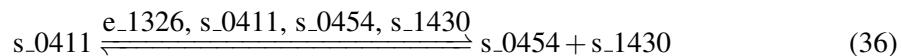
7.18 Reaction r_0085

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name 3',5'-bisphosphate nucleotidase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 74: Properties of each reactant.

Id	Name	SBO
s_0411	Adenosine 3',5'-bisphosphate	

Modifiers

Table 75: Properties of each modifier.

Id	Name	SBO
e_1326	cysQ	0000460
s_0411	Adenosine 3',5'-bisphosphate	
s_0454	AMP	
s_1430	Phosphate	

Products

Table 76: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{18} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0411 \cdot \left(\frac{[\text{s}_0411]}{\text{ic}0411} \right) + \text{ep}0454 \cdot \left(\frac{[\text{s}_0454]}{\text{ic}0454} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s}_1430]}{\text{ic}1430} \right) \right) \quad (37)$$

Table 77: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0411			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

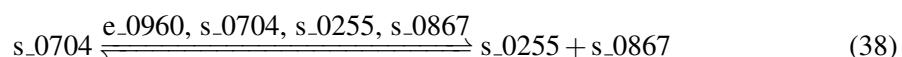
7.19 Reaction r_0092

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name 3,4-Dihydroxy-2-butanone-4-phosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 78: Properties of each reactant.

Id	Name	SBO
s_{_0704}	D-Ribulose 5-phosphate	

Modifiers

Table 79: Properties of each modifier.

Id	Name	SBO
e_{_0960}	ribB	0000460
s_{_0704}	D-Ribulose 5-phosphate	
s_{_0255}	3,4-dihydroxy-2-butanone 4-phosphate	
s_{_0867}	Formate	

Products

Table 80: Properties of each product.

Id	Name	SBO
s_{_0255}	3,4-dihydroxy-2-butanone 4-phosphate	
s_{_0867}	Formate	

Kinetic Law

Derived unit contains undeclared units

$$v_{19} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0704} \cdot \left(\frac{[\text{s_0704}]}{\text{ic0704}} \right) + \text{ep0255} \cdot \left(\frac{[\text{s_0255}]}{\text{ic0255}} \right) + \text{ep0867} \cdot \left(\frac{[\text{s_0867}]}{\text{ic0867}} \right) \right) \quad (39)$$

Table 81: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$1.23556926891731 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$1.23556926891731 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0704			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0255			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0867			-1.000	dimensionless	<input checked="" type="checkbox"/>

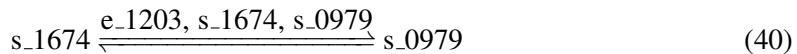
7.20 Reaction r_0096

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name 3-cis-2-trans-enoyl-CoA isomerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 82: Properties of each reactant.

Id	Name	SBO
s_1674	trans-Hexadec-2-enoyl-CoA	

Modifiers

Table 83: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
s_1674	trans-Hexadec-2-enoyl-CoA	
s_0979	Hexadecenoyl-CoA (n-C16:1CoA)	

Product

Table 84: Properties of each product.

Id	Name	SBO
s_0979	Hexadecenoyl-CoA (n-C16:1CoA)	

Kinetic Law

Derived unit contains undeclared units

$$v_{20} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1674} \cdot \left(\frac{[\text{s_1674}]}{\text{ic1674}} \right) + \text{ep0979} \cdot \left(\frac{[\text{s_0979}]}{\text{ic0979}} \right) \right) \quad (41)$$

Table 85: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1674			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0979			-1.000	dimensionless	<input checked="" type="checkbox"/>

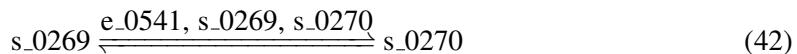
7.21 Reaction r_0098

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name 3-dehydroquinate dehydratase, irreversible

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 86: Properties of each reactant.

Id	Name	SBO
s_0269	3-Dehydroquinate	

Modifiers

Table 87: Properties of each modifier.

Id	Name	SBO
e_0541	aroD	0000460
s_0269	3-Dehydroquinate	
s_0270	3-Dehydroshikimate	

Product

Table 88: Properties of each product.

Id	Name	SBO
s_0270	3-Dehydroshikimate	

Kinetic Law

Derived unit contains undeclared units

$$v_{21} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0269} \cdot \left(\frac{[\text{s_0269}]}{\text{ic0269}} \right) + \text{ep0270} \cdot \left(\frac{[\text{s_0270}]}{\text{ic0270}} \right) \right) \quad (43)$$

Table 89: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0269			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0270			-1.000	dimensionless	<input checked="" type="checkbox"/>

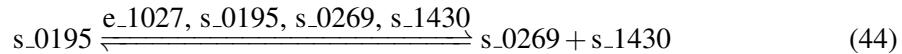
7.22 Reaction r_0099

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name 3-dehydroquinate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 90: Properties of each reactant.

Id	Name	SBO
s_0195	2-Dehydro-3-deoxy-D-arabino-heptonate 7-phosphate	

Modifiers

Table 91: Properties of each modifier.

Id	Name	SBO
e_1027	aroB	0000460
s_0195	2-Dehydro-3-deoxy-D-arabino-heptonate 7-phosphate	
s_0269	3-Dehydroquinate	
s_1430	Phosphate	

Products

Table 92: Properties of each product.

Id	Name	SBO
s_0269	3-Dehydroquinate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{22} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0195 \cdot \left(\frac{[s_{0195}]}{\text{ic}0195} \right) + \text{ep}0269 \cdot \left(\frac{[s_{0269}]}{\text{ic}0269} \right) + \text{ep}1430 \cdot \left(\frac{[s_{1430}]}{\text{ic}1430} \right) \right) \quad (45)$$

Table 93: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0195			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0269			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

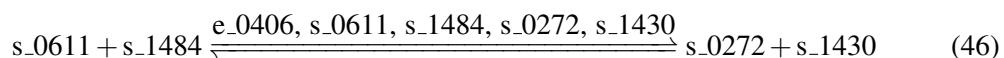
7.23 Reaction r_0100

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-deoxy -D-manno-octulosonic -acid 8-phosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 94: Properties of each reactant.

Id	Name	SBO
s_0611	D-Arabinose 5-phosphate	
s_1484	Phosphoenolpyruvate	

Modifiers

Table 95: Properties of each modifier.

Id	Name	SBO
e_0406	kdsA	0000460
s_0611	D-Arabinose 5-phosphate	
s_1484	Phosphoenolpyruvate	
s_0272	3-Deoxy-D-manno-octulosonate 8-phosphate	
s_1430	Phosphate	

Products

Table 96: Properties of each product.

Id	Name	SBO
s_0272	3-Deoxy-D-manno-octulosonate 8-phosphate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{23} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0611} \cdot \left(\frac{[\text{s_0611}]}{\text{ic0611}} \right) + \text{ep1484} \cdot \left(\frac{[\text{s_1484}]}{\text{ic1484}} \right) + \text{ep0272} \cdot \left(\frac{[\text{s_0272}]}{\text{ic0272}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (47)$$

Table 97: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0611			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1484			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0272			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

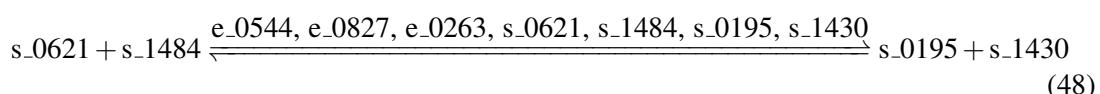
7.24 Reaction r_0101

This is a reversible reaction of two reactants forming two products influenced by seven modifiers.

Name 3-deoxy-D-arabino-heptulosonate 7-phosphate synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 98: Properties of each reactant.

Id	Name	SBO
s_0621	D-Erythrose 4-phosphate	
s_1484	Phosphoenolpyruvate	

Modifiers

Table 99: Properties of each modifier.

Id	Name	SBO
e_0544	aroH	0000460
e_0827	aroF	0000460
e_0263	aroG	0000460
s_0621	D-Erythrose 4-phosphate	
s_1484	Phosphoenolpyruvate	
s_0195	2-Dehydro-3-deoxy-D-arabino-heptonate 7-phosphate	
s_1430	Phosphate	

Products

Table 100: Properties of each product.

Id	Name	SBO
s_0195	2-Dehydro-3-deoxy-D-arabino-heptonate 7-phosphate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{24} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0621 \cdot \left(\frac{[\text{s}_0621]}{\text{ic}0621} \right) + \text{ep}1484 \cdot \left(\frac{[\text{s}_1484]}{\text{ic}1484} \right) + \text{ep}0195 \cdot \left(\frac{[\text{s}_0195]}{\text{ic}0195} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s}_1430]}{\text{ic}1430} \right) \right) \quad (49)$$

Table 101: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0621			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1484			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0195			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

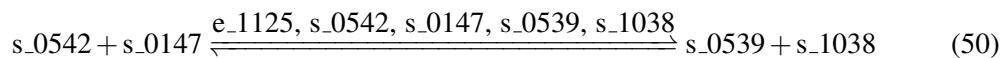
7.25 Reaction r_0102

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-deoxy-D-manno-octulosonic acid transferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 102: Properties of each reactant.

Id	Name
s_0542	CMP-3-deoxy-D-manno-octulosonate
s_0147	2,3,2'3'-Tetrakis(beta-hydroxymyristoyl)-D-glucosaminyl-1,6-beta-D-glucosamine 1,4'-bisphosphate

Modifiers

Table 103: Properties of each modifier.

Id	Name
e_1125	waaA
s_0542	CMP-3-deoxy-D-manno-octulosonate
s_0147	2,3,2'3'-Tetrakis(beta-hydroxymyristoyl)-D-glucosaminyl-1,6-beta-D-glucosamine 1,4'-bisphosphate
s_0539	CMP
s_1038	KDO-lipid IV(A)

Products

Table 104: Properties of each product.

Id	Name	SBO
s_0539	CMP	
s_1038	KDO-lipid IV(A)	

Kinetic Law

Derived unit contains undeclared units

$$v_{25} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0542 \cdot \left(\frac{[\text{s_0542}]}{\text{ic}0542} \right) + \text{ep}0147 \cdot \left(\frac{[\text{s_0147}]}{\text{ic}0147} \right) + \text{ep}0539 \cdot \left(\frac{[\text{s_0539}]}{\text{ic}0539} \right) + \text{ep}1038 \cdot \left(\frac{[\text{s_1038}]}{\text{ic}1038} \right) \right) \quad (51)$$

Table 105: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0542			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0147			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0539			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1038			-1.000	dimensionless	<input checked="" type="checkbox"/>

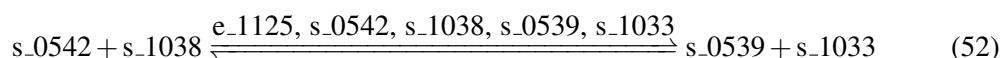
7.26 Reaction r_0103

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-deoxy-D-manno-octulosonic acid transferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 106: Properties of each reactant.

Id	Name	SBO
s_0542	CMP-3-deoxy-D-manno-octulosonate	
s_1038	KDO-lipid IV(A)	

Modifiers

Table 107: Properties of each modifier.

Id	Name	SBO
e_1125	waaA	0000460
s_0542	CMP-3-deoxy-D-manno-octulosonate	
s_1038	KDO-lipid IV(A)	
s_0539	CMP	
s_1033	KDO(2)-lipid IV(A)	

Products

Table 108: Properties of each product.

Id	Name	SBO
s_0539	CMP	
s_1033	KDO(2)-lipid IV(A)	

Kinetic Law

Derived unit contains undeclared units

$$v_{26} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0542 \cdot \left(\frac{[\text{s}_0542]}{\text{ic}0542} \right) + \text{ep}1038 \cdot \left(\frac{[\text{s}_1038]}{\text{ic}1038} \right) + \text{ep}0539 \cdot \left(\frac{[\text{s}_0539]}{\text{ic}0539} \right) + \text{ep}1033 \cdot \left(\frac{[\text{s}_1033]}{\text{ic}1033} \right) \right) \quad (53)$$

Table 109: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0542			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1038			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0539			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1033			-1.000	dimensionless	<input checked="" type="checkbox"/>

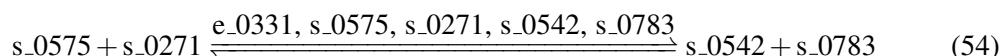
7.27 Reaction r_0105

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-deoxy-manno-octulosonate cytidylyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 110: Properties of each reactant.

Id	Name	SBO
s_{_0575}	CTP	
s_{_0271}	3-Deoxy-D-manno-2-octulosonate	

Modifiers

Table 111: Properties of each modifier.

Id	Name	SBO
e_{_0331}	kdsB	0000460
s_{_0575}	CTP	
s_{_0271}	3-Deoxy-D-manno-2-octulosonate	
s_{_0542}	CMP-3-deoxy-D-manno-octulosonate	
s_{_0783}	Diphosphate	

Products

Table 112: Properties of each product.

Id	Name	SBO
s_0542	CMP-3-deoxy-D-manno-octulosonate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{27} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0575 \cdot \left(\frac{[\text{s_0575}]}{\text{ic}0575} \right) + \text{ep}0271 \cdot \left(\frac{[\text{s_0271}]}{\text{ic}0271} \right) + \text{ep}0542 \cdot \left(\frac{[\text{s_0542}]}{\text{ic}0542} \right) + \text{ep}0783 \cdot \left(\frac{[\text{s_0783}]}{\text{ic}0783} \right) \right) \quad (55)$$

Table 113: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0575			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0271			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0542			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

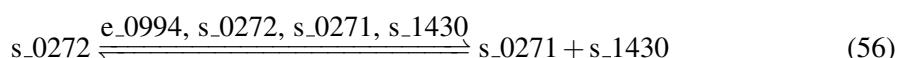
7.28 Reaction r_0106

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name 3-deoxy-manno-octulosonate-8-phosphatase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 114: Properties of each reactant.

Id	Name	SBO
s_0272	3-Deoxy-D-manno-octulosonate 8-phosphate	

Modifiers

Table 115: Properties of each modifier.

Id	Name	SBO
e_0994	kdsC	0000460
s_0272	3-Deoxy-D-manno-octulosonate 8-phosphate	
s_0271	3-Deoxy-D-manno-2-octulosonate	
s_1430	Phosphate	

Products

Table 116: Properties of each product.

Id	Name	SBO
s_0271	3-Deoxy-D-manno-2-octulosonate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{28} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0272 \cdot \left(\frac{[\text{s}_0272]}{\text{ic}0272} \right) + \text{ep}0271 \cdot \left(\frac{[\text{s}_0271]}{\text{ic}0271} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s}_1430]}{\text{ic}1430} \right) \right) \quad (57)$$

Table 117: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0272			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0271			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

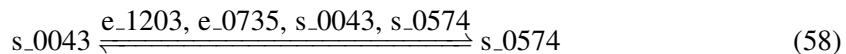
7.29 Reaction r_0120

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 3-hydroxyacyl-CoA dehydratase (3-hydroxybutanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 118: Properties of each reactant.

Id	Name	SBO
s_0043	(S)-3-Hydroxybutanoyl-CoA	

Modifiers

Table 119: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0043	(S)-3-Hydroxybutanoyl-CoA	
s_0574	Crotonoyl-CoA	

Product

Table 120: Properties of each product.

Id	Name	SBO
s_0574	Crotonoyl-CoA	

Kinetic Law

Derived unit contains undeclared units

$$v_{29} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0043 \cdot \left(\frac{[s_{0043}]}{\text{ic}0043} \right) + \text{ep}0574 \cdot \left(\frac{[s_{0574}]}{\text{ic}0574} \right) \right) \quad (59)$$

Table 121: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0043			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0574			-1.000	dimensionless	<input checked="" type="checkbox"/>

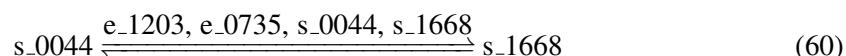
7.30 Reaction r_0121

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 3-hydroxyacyl-CoA dehydratase (3-hydroxydecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 122: Properties of each reactant.

Id	Name	SBO
s_0044	(S)-3-Hydroxydecanoyl-CoA	

Modifiers

Table 123: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0044	(S)-3-Hydroxydecanoyl-CoA	
s_1668	trans-Dec-2-enoyl-CoA	

Product

Table 124: Properties of each product.

Id	Name	SBO
s_1668	trans-Dec-2-enoyl-CoA	

Kinetic Law

Derived unit contains undeclared units

$$v_{30} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0044 \cdot \left(\frac{[\text{s_0044}]}{\text{ic}0044} \right) + \text{ep}1668 \cdot \left(\frac{[\text{s_1668}]}{\text{ic}1668} \right) \right) \quad (61)$$

Table 125: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0044			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1668			-1.000	dimensionless	<input checked="" type="checkbox"/>

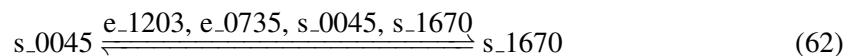
7.31 Reaction r_0122

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 3-hydroxyacyl-CoA dehydratase (3-hydroxydodecanoyle-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 126: Properties of each reactant.

Id	Name	SBO
s_0045	(S)-3-Hydroxydodecanoyle-CoA	

Modifiers

Table 127: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0045	(S)-3-Hydroxydodecanoyl-CoA	
s_1670	trans-Dodec-2-enoyl-CoA	

Product

Table 128: Properties of each product.

Id	Name	SBO
s_1670	trans-Dodec-2-enoyl-CoA	

Kinetic Law

Derived unit contains undeclared units

$$v_{31} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0045 \cdot \left(\frac{[\text{s_0045}]}{\text{ic}0045} \right) + \text{ep}1670 \cdot \left(\frac{[\text{s_1670}]}{\text{ic}1670} \right) \right) \quad (63)$$

Table 129: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0045			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1670			-1.000	dimensionless	<input checked="" type="checkbox"/>

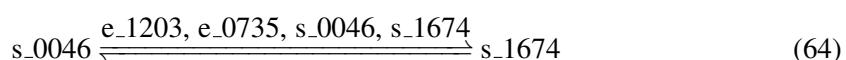
7.32 Reaction r_0123

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 3-hydroxyacyl-CoA dehydratase (3-hydroxyhexadecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 130: Properties of each reactant.

Id	Name	SBO
s_0046	(S)-3-Hydroxyhexadecanoyl-CoA	

Modifiers

Table 131: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0046	(S)-3-Hydroxyhexadecanoyl-CoA	
s_1674	trans-Hexadec-2-enoyl-CoA	

Product

Table 132: Properties of each product.

Id	Name	SBO
s_1674	trans-Hexadec-2-enoyl-CoA	

Kinetic Law

Derived unit contains undeclared units

$$v_{32} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0046 \cdot \left(\frac{[\text{s_0046}]}{\text{ic}0046} \right) + \text{ep}1674 \cdot \left(\frac{[\text{s_1674}]}{\text{ic}1674} \right) \right) \quad (65)$$

Table 133: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0046			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1674			-1.000	dimensionless	<input checked="" type="checkbox"/>

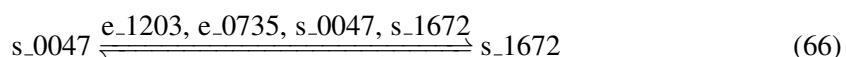
7.33 Reaction r_0124

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 3-hydroxyacyl-CoA dehydratase (3-hydroxyhexanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 134: Properties of each reactant.

Id	Name	SBO
s_0047	(S)-3-Hydroxyhexanoyl-CoA	

Modifiers

Table 135: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0047	(S)-3-Hydroxyhexanoyl-CoA	
s_1672	trans-Hex-2-enoyl-CoA	

Product

Table 136: Properties of each product.

Id	Name	SBO
s_1672	trans-Hex-2-enoyl-CoA	

Kinetic Law

Derived unit contains undeclared units

$$v_{33} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0047 \cdot \left(\frac{[s_{0047}]}{\text{ic}0047} \right) + \text{ep}1672 \cdot \left(\frac{[s_{1672}]}{\text{ic}1672} \right) \right) \quad (67)$$

Table 137: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0047			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1672			-1.000	dimensionless	<input checked="" type="checkbox"/>

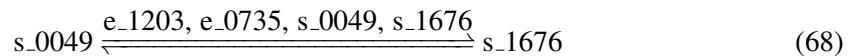
7.34 Reaction r_0126

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 3-hydroxyacyl-CoA dehydratase (3-hydroxyoctanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 138: Properties of each reactant.

Id	Name	SBO
s_0049	(S)-3-Hydroxyoctanoyl-CoA	

Modifiers

Table 139: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0049	(S)-3-Hydroxyoctanoyl-CoA	
s_1676	trans-Oct-2-enoyl-CoA	

Product

Table 140: Properties of each product.

Id	Name	SBO
s_1676	trans-Oct-2-enoyl-CoA	

Kinetic Law

Derived unit contains undeclared units

$$v_{34} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0049 \cdot \left(\frac{[\text{s_0049}]}{\text{ic}0049} \right) + \text{ep}1676 \cdot \left(\frac{[\text{s_1676}]}{\text{ic}1676} \right) \right) \quad (69)$$

Table 141: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0049			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1676			-1.000	dimensionless	<input checked="" type="checkbox"/>

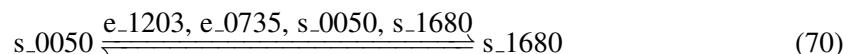
7.35 Reaction r_0127

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 3-hydroxyacyl-CoA dehydratase (3-hydroxytetradecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 142: Properties of each reactant.

Id	Name	SBO
s_0050	(S)-3-Hydroxytetradecanoyl-CoA	

Modifiers

Table 143: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0050	(S)-3-Hydroxytetradecanoyl-CoA	
s_1680	trans-Tetradec-2-enoyl-CoA	

Product

Table 144: Properties of each product.

Id	Name	SBO
s_1680	trans-Tetradec-2-enoyl-CoA	

Kinetic Law

Derived unit contains undeclared units

$$v_{35} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0050 \cdot \left(\frac{[\text{s_0050}]}{\text{ic}0050} \right) + \text{ep}1680 \cdot \left(\frac{[\text{s_1680}]}{\text{ic}1680} \right) \right) \quad (71)$$

Table 145: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0050			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1680			-1.000	dimensionless	<input checked="" type="checkbox"/>

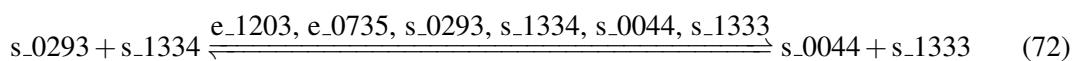
7.36 Reaction r_0128

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 3-hydroxyacyl-CoA dehydrogenase (3-oxodecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 146: Properties of each reactant.

Id	Name	SBO
s_0293	3-Oxodecanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 147: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0293	3-Oxodecanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0044	(S)-3-Hydroxydecanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 148: Properties of each product.

Id	Name	SBO
s_0044	(S)-3-Hydroxydecanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{36} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0293} \cdot \left(\frac{[\text{s_0293}]}{\text{ic0293}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep0044} \cdot \left(\frac{[\text{s_0044}]}{\text{ic0044}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) \right) \quad (73)$$

Table 149: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0293			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0044			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

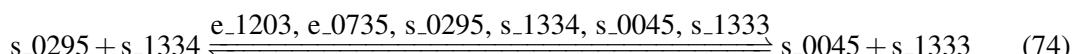
7.37 Reaction r_0129

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 3-hydroxyacyl-CoA dehydrogenase (3-oxododecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 150: Properties of each reactant.

Id	Name	SBO
s_0295	3-Oxododecanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 151: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0295	3-Oxododecanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0045	(S)-3-Hydroxydodecanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 152: Properties of each product.

Id	Name	SBO
s_0045	(S)-3-Hydroxydodecanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{37} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0295} \cdot \left(\frac{[\text{s_0295}]}{\text{ic0295}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep0045} \cdot \left(\frac{[\text{s_0045}]}{\text{ic0045}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) \right) \quad (75)$$

Table 153: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0295			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0045			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

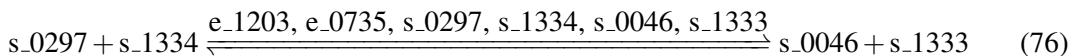
7.38 Reaction r_0130

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 3-hydroxyacyl-CoA dehydrogenase (3-oxohexadecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 154: Properties of each reactant.

Id	Name	SBO
s_0297	3-Oxohexadecanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 155: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0297	3-Oxohexadecanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0046	(S)-3-Hydroxyhexadecanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 156: Properties of each product.

Id	Name	SBO
s_0046	(S)-3-Hydroxyhexadecanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{38} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0297} \cdot \left(\frac{[\text{s}_0297]}{\text{ic0297}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) + \text{ep0046} \cdot \left(\frac{[\text{s}_0046]}{\text{ic0046}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) \right) \quad (77)$$

Table 157: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0297			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0046			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

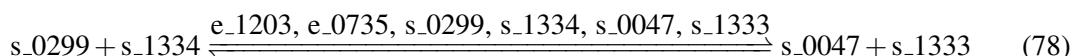
7.39 Reaction r_0131

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 3-hydroxyacyl-CoA dehydrogenase (3-oxohexanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 158: Properties of each reactant.

Id	Name	SBO
s_0299	3-Oxohexanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 159: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0299	3-Oxohexanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0047	(S)-3-Hydroxyhexanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 160: Properties of each product.

Id	Name	SBO
s_0047	(S)-3-Hydroxyhexanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{39} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0299 \cdot \left(\frac{[\text{s_0299}]}{\text{ic}0299} \right) + \text{ep}1334 \cdot \left(\frac{[\text{s_1334}]}{\text{ic}1334} \right) + \text{ep}0047 \cdot \left(\frac{[\text{s_0047}]}{\text{ic}0047} \right) + \text{ep}1333 \cdot \left(\frac{[\text{s_1333}]}{\text{ic}1333} \right) \right) \quad (79)$$

Table 161: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0299			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0047			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

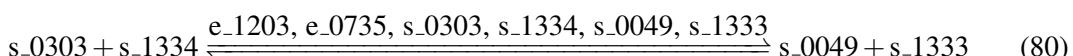
7.40 Reaction r_0133

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 3-hydroxyacyl-CoA dehydrogenase (3-oxooctanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 162: Properties of each reactant.

Id	Name	SBO
s_0303	3-Oxoctanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 163: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0303	3-Oxoctanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0049	(S)-3-Hydroxyoctanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 164: Properties of each product.

Id	Name	SBO
s_0049	(S)-3-Hydroxyoctanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{40} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0303} \cdot \left(\frac{[\text{s}_0303]}{\text{ic0303}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) + \text{ep0049} \cdot \left(\frac{[\text{s}_0049]}{\text{ic0049}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) \right) \quad (81)$$

Table 165: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0303			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0049			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

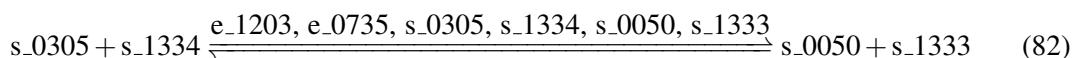
7.41 Reaction r_0134

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 3-hydroxyacyl-CoA dehydrogenase (3-oxotetradecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 166: Properties of each reactant.

Id	Name	SBO
s_0305	3-Oxotetradecanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 167: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0305	3-Oxotetradecanoyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0050	(S)-3-Hydroxytetradecanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 168: Properties of each product.

Id	Name	SBO
s_0050	(S)-3-Hydroxytetradecanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{41} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0305 \cdot \left(\frac{[\text{s_0305}]}{\text{ic}0305} \right) + \text{ep}1334 \cdot \left(\frac{[\text{s_1334}]}{\text{ic}1334} \right) + \text{ep}0050 \cdot \left(\frac{[\text{s_0050}]}{\text{ic}0050} \right) + \text{ep}1333 \cdot \left(\frac{[\text{s_1333}]}{\text{ic}1333} \right) \right) \quad (83)$$

Table 169: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0305			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0050			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

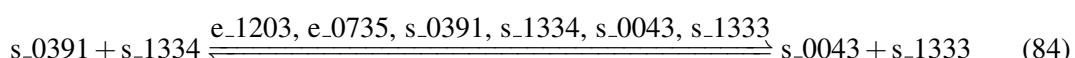
7.42 Reaction r_0135

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 3-hydroxyacyl-CoA dehydrogenase (acetoacetyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 170: Properties of each reactant.

Id	Name	SBO
s_0391	Acetoacetyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 171: Properties of each modifier.

Id	Name	SBO
e_1203	fadB	0000460
e_0735	fadJ	0000460
s_0391	Acetoacetyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0043	(S)-3-Hydroxybutanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 172: Properties of each product.

Id	Name	SBO
s_0043	(S)-3-Hydroxybutanoyl-CoA	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{42} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0391} \cdot \left(\frac{[\text{s}_0391]}{\text{ic0391}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) + \text{ep0043} \cdot \left(\frac{[\text{s}_0043]}{\text{ic0043}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) \right) \quad (85)$$

Table 173: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0391			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0043			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

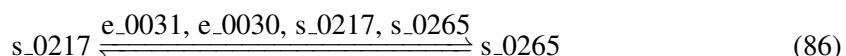
7.43 Reaction r_0138

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name 3-isopropylmalate dehydratase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 174: Properties of each reactant.

Id	Name	SBO
s_0217	2-Isopropylmaleate	

Modifiers

Table 175: Properties of each modifier.

Id	Name	SBO
e_0031	leuC	0000460
e_0030	leuD	0000460
s_0217	2-Isopropylmaleate	
s_0265	3-Carboxy-2-hydroxy-4-methylpentanoate	

Product

Table 176: Properties of each product.

Id	Name	SBO
s_0265	3-Carboxy-2-hydroxy-4-methylpentanoate	

Kinetic Law

Derived unit contains undeclared units

$$v_{43} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0217} \cdot \left(\frac{[\text{s_0217}]}{\text{ic0217}} \right) + \text{ep0265} \cdot \left(\frac{[\text{s_0265}]}{\text{ic0265}} \right) \right) \quad (87)$$

Table 177: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0217			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0265			-1.000	dimensionless	<input checked="" type="checkbox"/>

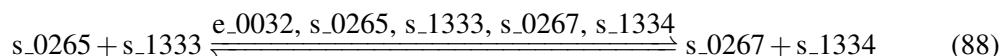
7.44 Reaction r_0139

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-isopropylmalate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 178: Properties of each reactant.

Id	Name	SBO
s_0265	3-Carboxy-2-hydroxy-4-methylpentanoate	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 179: Properties of each modifier.

Id	Name	SBO
e_0032	leuB	0000460

Id	Name	SBO
s_0265	3-Carboxy-2-hydroxy-4-methylpentanoate	
s_1333	Nicotinamide adenine dinucleotide	
s_0267	3-Carboxy-4-methyl-2-oxopentanoate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Products

Table 180: Properties of each product.

Id	Name	SBO
s_0267	3-Carboxy-4-methyl-2-oxopentanoate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{44} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0265} \cdot \left(\frac{[\text{s}_0265]}{\text{ic0265}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) + \text{ep0267} \cdot \left(\frac{[\text{s}_0267]}{\text{ic0267}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) \right) \quad (89)$$

Table 181: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0265			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0267			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

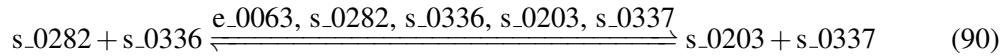
7.45 Reaction r_0143

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-methyl-2-oxobutanoate hydroxymethyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 182: Properties of each reactant.

Id	Name	SBO
s_0282	3-Methyl-2-oxobutanoate	
s_0336	5,10-Methylenetetrahydrofolate	

Modifiers

Table 183: Properties of each modifier.

Id	Name	SBO
e_0063	panB	0000460
s_0282	3-Methyl-2-oxobutanoate	
s_0336	5,10-Methylenetetrahydrofolate	
s_0203	2-Dehydropantoate	
s_0337	5,6,7,8-Tetrahydrofolate	

Products

Table 184: Properties of each product.

Id	Name	SBO
s_0203	2-Dehydropantoate	
s_0337	5,6,7,8-Tetrahydrofolate	

Kinetic Law

Derived unit contains undeclared units

$$v_{45} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0282} \cdot \left(\frac{[s_{0282}]}{\text{ic0282}} \right) + \text{ep0336} \cdot \left(\frac{[s_{0336}]}{\text{ic0336}} \right) + \text{ep0203} \cdot \left(\frac{[s_{0203}]}{\text{ic0203}} \right) + \text{ep0337} \cdot \left(\frac{[s_{0337}]}{\text{ic0337}} \right) \right) \quad (91)$$

Table 185: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388884133 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388884133 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0282			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0203			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0337			-1.000	dimensionless	<input checked="" type="checkbox"/>

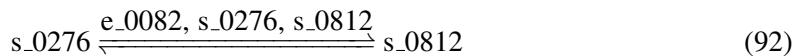
7.46 Reaction r_0145

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name 3-Oxo-glutaryl-[ACP] methyl ester dehydratase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 186: Properties of each reactant.

Id	Name	SBO
s_0276	3-Hydroxyglutaryl-[acyl-carrier protein] methyl ester	

Modifiers

Table 187: Properties of each modifier.

Id	Name	SBO
e_0082	fabZ	0000460
s_0276	3-Hydroxyglutaryl-[acyl-carrier protein] methyl ester	
s_0812	Enoylglutaryl-[acyl-carrier protein] methyl ester	

Product

Table 188: Properties of each product.

Id	Name	SBO
s_0812	Enoylglutaryl-[acyl-carrier protein] methyl ester	

Kinetic Law

Derived unit contains undeclared units

$$v_{46} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0276} \cdot \left(\frac{[\text{s_0276}]}{\text{ic0276}} \right) + \text{ep0812} \cdot \left(\frac{[\text{s_0812}]}{\text{ic0812}} \right) \right) \quad (93)$$

Table 189: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0276			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0812			-1.000	dimensionless	<input checked="" type="checkbox"/>

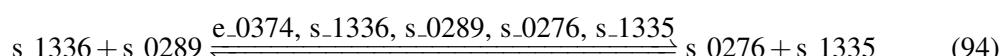
7.47 Reaction r_0146

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-Oxo-glutaryl-[ACP] methyl ester reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 190: Properties of each reactant.

Id	Name	SBO
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0289	3-Oxo-glutaryl-[acyl-carrier protein] methyl ester	

Modifiers

Table 191: Properties of each modifier.

Id	Name	SBO
e_0374	fabG	0000460
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0289	3-Oxo-glutaryl-[acyl-carrier protein] methyl ester	
s_0276	3-Hydroxyglutaryl-[acyl-carrier protein] methyl ester	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 192: Properties of each product.

Id	Name	SBO
s_0276	3-Hydroxyglutaryl-[acyl-carrier protein] methyl ester	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{47} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1336} \cdot \left(\frac{[\text{s}_1336]}{\text{ic1336}} \right) + \text{ep0289} \cdot \left(\frac{[\text{s}_0289]}{\text{ic0289}} \right) + \text{ep0276} \cdot \left(\frac{[\text{s}_0276]}{\text{ic0276}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s}_1335]}{\text{ic1335}} \right) \right) \quad (95)$$

Table 193: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0289			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0276			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

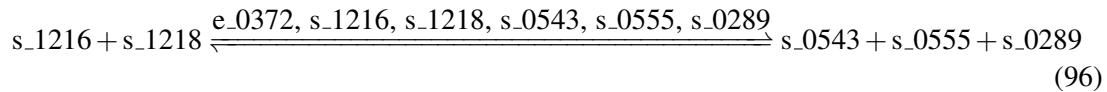
7.48 Reaction r_0147

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name 3-Oxo-glutaryl-[ACP] methyl ester synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 194: Properties of each reactant.

Id	Name	SBO
s_1216	Malonyl-[acyl-carrier protein]	
s_1218	malonyl-CoA methyl ester	

Modifiers

Table 195: Properties of each modifier.

Id	Name	SBO
e_0372	fabH	0000460
s_1216	Malonyl-[acyl-carrier protein]	
s_1218	malonyl-CoA methyl ester	
s_0543	CO2	
s_0555	Coenzyme A	
s_0289	3-Oxo-glutaryl-[acyl-carrier protein] methyl ester	

Products

Table 196: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_0555	Coenzyme A	
s_0289	3-Oxo-glutaryl-[acyl-carrier protein] methyl ester	

Kinetic Law

Derived unit contains undeclared units

$$v_{48} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1216} \cdot \left(\frac{[\text{s_1216}]}{\text{ic1216}} \right) + \text{ep1218} \cdot \left(\frac{[\text{s_1218}]}{\text{ic1218}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) + \text{ep0289} \cdot \left(\frac{[\text{s_0289}]}{\text{ic0289}} \right) \right) \quad (97)$$

Table 197: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1216			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1218			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0289			-1.000	dimensionless	<input checked="" type="checkbox"/>

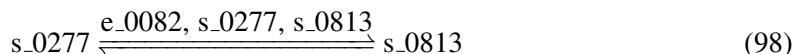
7.49 Reaction r_0148

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name 3-Oxo-pimeloyl-[ACP] methyl ester dehydratase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 198: Properties of each reactant.

Id	Name	SBO
s_0277	3-Hydroxypimeloyl-[acyl-carrier protein] methyl ester	

Modifiers

Table 199: Properties of each modifier.

Id	Name	SBO
e_0082	fabZ	0000460
s_0277	3-Hydroxypimeloyl-[acyl-carrier protein] methyl ester	
s_0813	Enoylpimeloyl-[acyl-carrier protein] methyl ester	

Product

Table 200: Properties of each product.

Id	Name	SBO
s_0813	Enoylpimeloyl-[acyl-carrier protein] methyl ester	

Kinetic Law

Derived unit contains undeclared units

$$v_{49} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0277 \cdot \left(\frac{[\text{s}_0277]}{\text{ic}0277} \right) + \text{ep}0813 \cdot \left(\frac{[\text{s}_0813]}{\text{ic}0813} \right) \right) \quad (99)$$

Table 201: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0277			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0813			-1.000	dimensionless	<input checked="" type="checkbox"/>

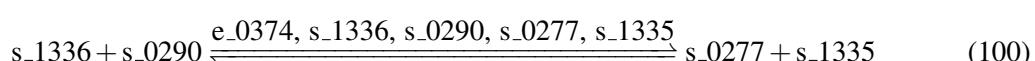
7.50 Reaction r_0149

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-Oxo-pimeloyl-[ACP] methyl ester reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 202: Properties of each reactant.

Id	Name	SBO
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0290	3-Oxo-pimeloyl-[acyl-carrier protein] methyl ester	

Modifiers

Table 203: Properties of each modifier.

Id	Name	SBO
e_0374	fabG	0000460
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0290	3-Oxo-pimeloyl-[acyl-carrier protein] methyl ester	
s_0277	3-Hydroxypimeloyl-[acyl-carrier protein] methyl ester	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 204: Properties of each product.

Id	Name	SBO
s_0277	3-Hydroxypimeloyl-[acyl-carrier protein] methyl ester	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{50} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep0290} \cdot \left(\frac{[\text{s_0290}]}{\text{ic0290}} \right) + \text{ep0277} \cdot \left(\frac{[\text{s_0277}]}{\text{ic0277}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) \right) \quad (101)$$

Table 205: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0290			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0277			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

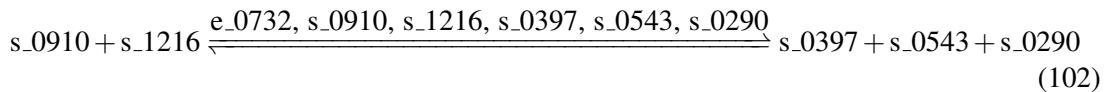
7.51 Reaction r_0150

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name 3-Oxo-pimeloyl-[ACP] methyl ester synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 206: Properties of each reactant.

Id	Name	SBO
s_0910	Glutaryl-[acyl-carrier protein] methyl ester	
s_1216	Malonyl-[acyl-carrier protein]	

Modifiers

Table 207: Properties of each modifier.

Id	Name	SBO
e_0732	fabB	0000460
s_0910	Glutaryl-[acyl-carrier protein] methyl ester	
s_1216	Malonyl-[acyl-carrier protein]	
s_0397	acyl carrier protein	
s_0543	CO2	
s_0290	3-Oxo-pimeloyl-[acyl-carrier protein] methyl ester	

Products

Table 208: Properties of each product.

Id	Name	SBO
s_0397	acyl carrier protein	
s_0543	CO2	
s_0290	3-Oxo-pimeloyl-[acyl-carrier protein] methyl ester	

Kinetic Law

Derived unit contains undeclared units

$$v_{51} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0910} \cdot \left(\frac{[\text{s_0910}]}{\text{ic0910}} \right) + \text{ep1216} \cdot \left(\frac{[\text{s_1216}]}{\text{ic1216}} \right) + \text{ep0397} \cdot \left(\frac{[\text{s_0397}]}{\text{ic0397}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep0290} \cdot \left(\frac{[\text{s_0290}]}{\text{ic0290}} \right) \right) \quad (103)$$

Table 209: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0910			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1216			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0290			-1.000	dimensionless	<input checked="" type="checkbox"/>

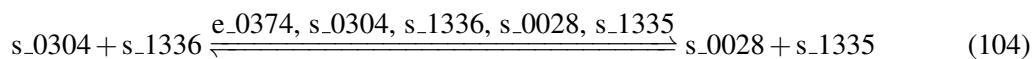
7.52 Reaction r_0154

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-oxoacyl-[acyl-carrier-protein] reductase (n-C14:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 210: Properties of each reactant.

Id	Name	SBO
s_0304	3-Oxotetradecanoyl-[acyl-carrier protein]	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 211: Properties of each modifier.

Id	Name	SBO
e_0374	fabG	0000460
s_0304	3-Oxotetradecanoyl-[acyl-carrier protein]	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0028	(R)-3-Hydroxytetradecanoyl-[acyl-carrier protein]	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 212: Properties of each product.

Id	Name	SBO
s_0028	(R)-3-Hydroxytetradecanoyl-[acyl-carrier protein]	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{52} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0304} \cdot \left(\frac{[\text{s}_0304]}{\text{ic0304}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s}_1336]}{\text{ic1336}} \right) + \text{ep0028} \cdot \left(\frac{[\text{s}_0028]}{\text{ic0028}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s}_1335]}{\text{ic1335}} \right) \right) \quad (105)$$

Table 213: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0304			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0028			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

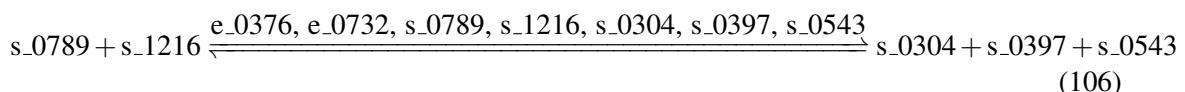
7.53 Reaction r_0166

This is a reversible reaction of two reactants forming three products influenced by seven modifiers.

Name 3-oxoacyl-[acyl-carrier-protein] synthase (n-C14:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 214: Properties of each reactant.

Id	Name	SBO
s_0789	Dodecanoyl-ACP (n-C12:0ACP)	
s_1216	Malonyl-[acyl-carrier protein]	

Modifiers

Table 215: Properties of each modifier.

Id	Name	SBO
e_0376	fabF	0000460
e_0732	fabB	0000460
s_0789	Dodecanoyl-ACP (n-C12:0ACP)	
s_1216	Malonyl-[acyl-carrier protein]	
s_0304	3-Oxotetradecanoyl-[acyl-carrier protein]	
s_0397	acyl carrier protein	
s_0543	CO2	

Products

Table 216: Properties of each product.

Id	Name	SBO
s_0304	3-Oxotetradecanoyl-[acyl-carrier protein]	
s_0397	acyl carrier protein	
s_0543	CO2	

Kinetic Law

Derived unit contains undeclared units

$$v_{53} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0789} \cdot \left(\frac{[\text{s_0789}]}{\text{ic0789}} \right) + \text{ep1216} \cdot \left(\frac{[\text{s_1216}]}{\text{ic1216}} \right) + \text{ep0304} \cdot \left(\frac{[\text{s_0304}]}{\text{ic0304}} \right) + \text{ep0397} \cdot \left(\frac{[\text{s_0397}]}{\text{ic0397}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) \right) \quad (107)$$

Table 217: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0789			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1216			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0304			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

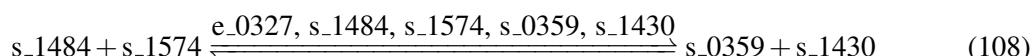
7.54 Reaction r_0175

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 3-phosphoshikimate 1-carboxyvinyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 218: Properties of each reactant.

Id	Name	SBO
s_1484	Phosphoenolpyruvate	
s_1574	Shikimate 5-phosphate	

Modifiers

Table 219: Properties of each modifier.

Id	Name	SBO
e_0327	aroA	0000460
s_1484	Phosphoenolpyruvate	
s_1574	Shikimate 5-phosphate	
s_0359	5-O-(1-Carboxyvinyl)-3-phosphoshikimate	
s_1430	Phosphate	

Products

Table 220: Properties of each product.

Id	Name	SBO
s_0359	5-O-(1-Carboxyvinyl)-3-phosphoshikimate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{54} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1484} \cdot \left(\frac{[\text{s}_1484]}{\text{ic1484}} \right) + \text{ep1574} \cdot \left(\frac{[\text{s}_1574]}{\text{ic1574}} \right) + \text{ep0359} \cdot \left(\frac{[\text{s}_0359]}{\text{ic0359}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) \right) \quad (109)$$

Table 221: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1484			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1574			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0359			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.55 Reaction r_0176

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name 4,5-dihydroxy-2,3-pentanedione cyclization (spontaneous)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 222: Properties of each reactant.

Id	Name	SBO
s_0310	4,5-dihydroxy-2,3-pentanedione	

Modifiers

Table 223: Properties of each modifier.

Id	Name	SBO
s_0310	4,5-dihydroxy-2,3-pentanedione	
s_0004	(2R,4S)-2-methyl-2,4-dihydroxydihydrofuran-3-one	

Product

Table 224: Properties of each product.

Id	Name	SBO
s_0004	(2R,4S)-2-methyl-2,4-dihydroxydihydrofuran-3-one	

Kinetic Law

Derived unit contains undeclared units

$$v_{55} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0310} \cdot \left(\frac{[\text{s_0310}]}{\text{ic0310}} \right) + \text{ep0004} \cdot \left(\frac{[\text{s_0004}]}{\text{ic0004}} \right) \right) \quad (111)$$

Table 225: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0310			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0004			-1.000	dimensionless	<input checked="" type="checkbox"/>

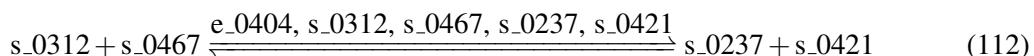
7.56 Reaction r_0178

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 226: Properties of each reactant.

Id	Name	SBO
s_0312	4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	
s_0467	ATP	

Modifiers

Table 227: Properties of each modifier.

Id	Name	SBO
e_0404	ispE	0000460

Id	Name	SBO
s_0312	4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	
s_0467	ATP	
s_0237	2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	
s_0421	ADP	

Products

Table 228: Properties of each product.

Id	Name	SBO
s_0237	2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol	
s_0421	ADP	

Kinetic Law

Derived unit contains undeclared units

$$v_{56} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0312 \cdot \left(\frac{[\text{s_0312}]}{\text{ic0312}} \right) + \text{ep}0467 \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep}0237 \cdot \left(\frac{[\text{s_0237}]}{\text{ic0237}} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) \right) \quad (113)$$

Table 229: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.30916477964549 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0312			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0237			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>

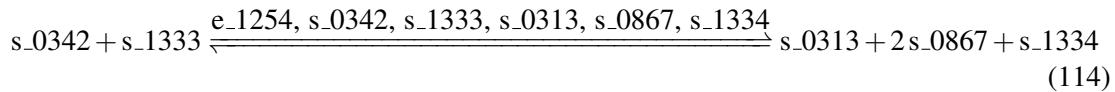
7.57 Reaction r_0179

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name 4-amino-2-methyl-5-phosphomethylpyrimidine synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 230: Properties of each reactant.

Id	Name	SBO
s_{_0342}	5-amino-1-(5-phospho-D-ribosyl)imidazole	
s_{_1333}	Nicotinamide adenine dinucleotide	

Modifiers

Table 231: Properties of each modifier.

Id	Name	SBO
e_{_1254}	thiC	0000460
s_{_0342}	5-amino-1-(5-phospho-D-ribosyl)imidazole	
s_{_1333}	Nicotinamide adenine dinucleotide	
s_{_0313}	4-Amino-2-methyl-5-phosphomethylpyrimidine	
s_{_0867}	Formate	
s_{_1334}	Nicotinamide adenine dinucleotide - reduced	

Products

Table 232: Properties of each product.

Id	Name	SBO
s_{_0313}	4-Amino-2-methyl-5-phosphomethylpyrimidine	
s_{_0867}	Formate	
s_{_1334}	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{57} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0342} \cdot \left(\frac{[\text{s_0342}]}{\text{ic0342}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep0313} \cdot \left(\frac{[\text{s_0313}]}{\text{ic0313}} \right) + \text{ep0867} \cdot \left(\frac{[\text{s_0867}]}{\text{ic0867}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) \right) \quad (115)$$

Table 233: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0342			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0313			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0867			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

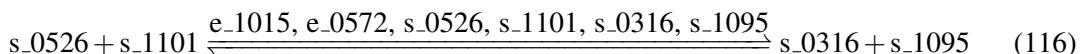
7.58 Reaction r_0181

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name 4-amino-4-deoxychorismate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 234: Properties of each reactant.

Id	Name	SBO
s_0526	chorismate	
s_1101	L-Glutamine	

Modifiers

Table 235: Properties of each modifier.

Id	Name	SBO
e_1015	pabA	0000460
e_0572	pabB	0000460
s_0526	chorismate	
s_1101	L-Glutamine	
s_0316	4-amino-4-deoxychorismate	
s_1095	L-Glutamate	

Products

Table 236: Properties of each product.

Id	Name	SBO
s_0316	4-amino-4-deoxychorismate	
s_1095	L-Glutamate	

Kinetic Law

Derived unit contains undeclared units

$$v_{58} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0526 \cdot \left(\frac{[\text{s}_0526]}{\text{ic}0526} \right) + \text{ep}1101 \cdot \left(\frac{[\text{s}_1101]}{\text{ic}1101} \right) + \text{ep}0316 \cdot \left(\frac{[\text{s}_0316]}{\text{ic}0316} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s}_1095]}{\text{ic}1095} \right) \right) \quad (117)$$

Table 237: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0526			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1101			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0316			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>

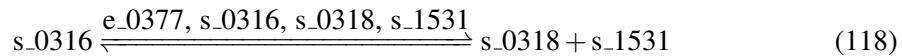
7.59 Reaction r_0182

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name 4-aminobenzoate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 238: Properties of each reactant.

Id	Name	SBO
s_0316	4-amino-4-deoxychorismate	

Modifiers

Table 239: Properties of each modifier.

Id	Name	SBO
e_0377	pabC	0000460
s_0316	4-amino-4-deoxychorismate	
s_0318	4-Aminobenzoate	
s_1531	Pyruvate	

Products

Table 240: Properties of each product.

Id	Name	SBO
s_0318	4-Aminobenzoate	
s_1531	Pyruvate	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{59} = & \text{vol}(\text{cell}) \cdot v0 \\ & \cdot \left(1 + \text{ep0316} \cdot \left(\frac{[\text{s_0316}]}{\text{ic0316}} \right) + \text{ep0318} \cdot \left(\frac{[\text{s_0318}]}{\text{ic0318}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s_1531}]}{\text{ic1531}} \right) \right) \end{aligned} \quad (119)$$

Table 241: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0316			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0318			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			-1.000	dimensionless	<input checked="" type="checkbox"/>

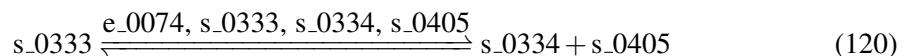
7.60 Reaction r_0186

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name 5'-deoxyadenosine nucleosidase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 242: Properties of each reactant.

Id	Name	SBO
s_0333	5'-Deoxyadenosine	

Modifiers

Table 243: Properties of each modifier.

Id	Name	SBO
e_0074	mtnN	0000460
s_0333	5'-Deoxyadenosine	
s_0334	5'-deoxyribose	
s_0405	Adenine	

Products

Table 244: Properties of each product.

Id	Name	SBO
s_0334	5'-deoxyribose	
s_0405	Adenine	

Kinetic Law

Derived unit contains undeclared units

$$v_{60} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0333 \cdot \left(\frac{[\text{s_0333}]}{\text{ic}0333} \right) + \text{ep}0334 \cdot \left(\frac{[\text{s_0334}]}{\text{ic}0334} \right) + \text{ep}0405 \cdot \left(\frac{[\text{s_0405}]}{\text{ic}0405} \right) \right) \quad (121)$$

Table 245: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.11662651885034 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.11662651885034 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0334			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0405			-1.000	dimensionless	<input checked="" type="checkbox"/>

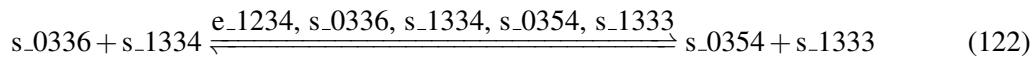
7.61 Reaction r_0211

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 5,10-methylenetetrahydrofolate reductase (NADH)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 246: Properties of each reactant.

Id	Name	SBO
s_0336	5,10-Methylenetetrahydrofolate	

Id	Name	SBO
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 247: Properties of each modifier.

Id	Name	SBO
e_1234	metF	0000460
s_0336	5,10-Methylenetetrahydrofolate	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0354	5-Methyltetrahydrofolate	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 248: Properties of each product.

Id	Name	SBO
s_0354	5-Methyltetrahydrofolate	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{61} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0336} \cdot \left(\frac{[\text{s}_0336]}{\text{ic0336}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) + \text{ep0354} \cdot \left(\frac{[\text{s}_0354]}{\text{ic0354}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) \right) \quad (123)$$

Table 249: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0354			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

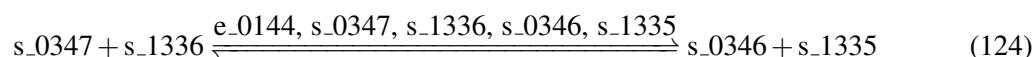
7.62 Reaction r_0212

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 5-amino-6-(5'-phosphoribosylamino)uracil reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 250: Properties of each reactant.

Id	Name	SBO
s_0347	5-Amino-6-(5'-phosphoribosylamino)uracil	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 251: Properties of each modifier.

Id	Name	SBO
e_0144	ribD	0000460
s_0347	5-Amino-6-(5'-phosphoribosylamino)uracil	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0346	5-Amino-6-(5'-phosphoribitylamino)uracil	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 252: Properties of each product.

Id	Name	SBO
s_0346	5-Amino-6-(5'-phosphoribitylamino)uracil	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{62} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0347} \cdot \left(\frac{[\text{s_0347}]}{\text{ic0347}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep0346} \cdot \left(\frac{[\text{s_0346}]}{\text{ic0346}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) \right) \quad (125)$$

Table 253: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0347			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0346			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

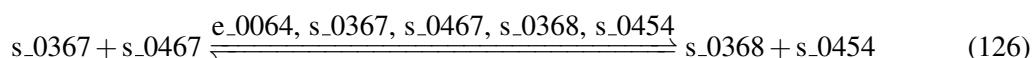
7.63 Reaction r_0216

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name 6-hydroxymethyl-dihydropterin pyrophosphokinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 254: Properties of each reactant.

Id	Name	SBO
s_0367	6-hydroxymethyl dihydropterin	
s_0467	ATP	

Modifiers

Table 255: Properties of each modifier.

Id	Name	SBO
e_0064	folK	0000460
s_0367	6-hydroxymethyl dihydropterin	
s_0467	ATP	
s_0368	6-hydroxymethyl-dihydropterin pyrophosphate	
s_0454	AMP	

Products

Table 256: Properties of each product.

Id	Name	SBO
s_0368	6-hydroxymethyl-dihydropterin pyrophosphate	
s_0454	AMP	

Kinetic Law

Derived unit contains undeclared units

$$v_{63} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0367} \cdot \left(\frac{[\text{s_0367}]}{\text{ic0367}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0368} \cdot \left(\frac{[\text{s_0368}]}{\text{ic0368}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) \right) \quad (127)$$

Table 257: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0367			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0368			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>

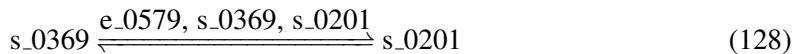
7.64 Reaction r_0217

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name 6-phosphogluconate dehydratase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 258: Properties of each reactant.

Id	Name	SBO
s_0369	6-Phospho-D-gluconate	

Modifiers

Table 259: Properties of each modifier.

Id	Name	SBO
e_0579	edd	0000460
s_0369	6-Phospho-D-gluconate	
s_0201	2-Dehydro-3-deoxy-D-gluconate 6-phosphate	

Product

Table 260: Properties of each product.

Id	Name	SBO
s_0201	2-Dehydro-3-deoxy-D-gluconate 6-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{64} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0369} \cdot \left(\frac{[s_0369]}{\text{ic0369}} \right) + \text{ep0201} \cdot \left(\frac{[s_0201]}{\text{ic0201}} \right) \right) \quad (129)$$

Table 261: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.880	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			0.880	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0369			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0201			-1.000	dimensionless	<input checked="" type="checkbox"/>

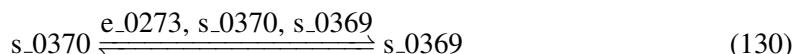
7.65 Reaction r_0218

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name 6-phosphogluconolactonase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 262: Properties of each reactant.

Id	Name	SBO
s_0370	6-phospho-D-glucono-1,5-lactone	

Modifiers

Table 263: Properties of each modifier.

Id	Name	SBO
e_0273	pgl	0000460
s_0370	6-phospho-D-glucono-1,5-lactone	
s_0369	6-Phospho-D-gluconate	

Product

Table 264: Properties of each product.

Id	Name	SBO
s_0369	6-Phospho-D-gluconate	

Kinetic Law

Derived unit contains undeclared units

$$v_{65} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0370} \cdot \left(\frac{[\text{s_0370}]}{\text{ic0370}} \right) + \text{ep0369} \cdot \left(\frac{[\text{s_0369}]}{\text{ic0369}} \right) \right) \quad (131)$$

Table 265: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.880	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.880	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0370			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0369			-1.000	dimensionless	<input checked="" type="checkbox"/>

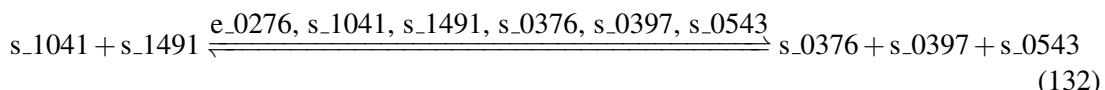
7.66 Reaction r_0222

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name 8-amino-7-oxononanoate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 266: Properties of each reactant.

Id	Name	SBO
s_1041	L-Alanine	
s_1491	Pimeloyl-[acyl-carrier protein]	

Modifiers

Table 267: Properties of each modifier.

Id	Name	SBO
e_0276	bioF	0000460

Id	Name	SBO
s_1041	L-Alanine	
s_1491	Pimeloyl-[acyl-carrier protein]	
s_0376	8-Amino-7-oxononanoate	
s_0397	acyl carrier protein	
s_0543	CO2	

Products

Table 268: Properties of each product.

Id	Name	SBO
s_0376	8-Amino-7-oxononanoate	
s_0397	acyl carrier protein	
s_0543	CO2	

Kinetic Law

Derived unit contains undeclared units

$$v_{66} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1041} \cdot \left(\frac{[\text{s_1041}]}{\text{ic1041}} \right) + \text{ep1491} \cdot \left(\frac{[\text{s_1491}]}{\text{ic1491}} \right) + \text{ep0376} \cdot \left(\frac{[\text{s_0376}]}{\text{ic0376}} \right) + \text{ep0397} \cdot \left(\frac{[\text{s_0397}]}{\text{ic0397}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) \right) \quad (133)$$

Table 269: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1041			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1491			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0376			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

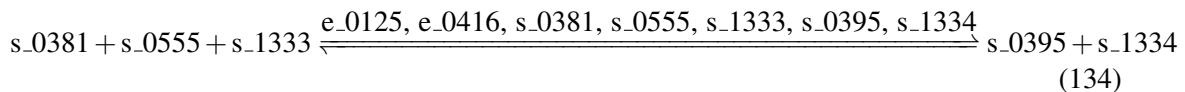
7.67 Reaction r_0224

This is a reversible reaction of three reactants forming two products influenced by seven modifiers.

Name acetaldehyde dehydrogenase (acetylating)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 270: Properties of each reactant.

Id	Name	SBO
s_0381	Acetaldehyde	
s_0555	Coenzyme A	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 271: Properties of each modifier.

Id	Name	SBO
e_0125	mhpF	0000460
e_0416	adhE	0000460
s_0381	Acetaldehyde	
s_0555	Coenzyme A	
s_1333	Nicotinamide adenine dinucleotide	
s_0395	Acetyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Products

Table 272: Properties of each product.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{67} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0381} \cdot \left(\frac{[\text{s_0381}]}{\text{ic0381}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) \right) \quad (135)$$

Table 273: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0381			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0395			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

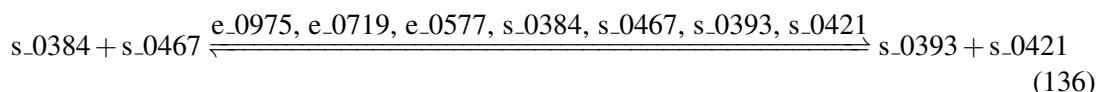
7.68 Reaction r_0225

This is a reversible reaction of two reactants forming two products influenced by seven modifiers.

Name acetate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 274: Properties of each reactant.

Id	Name	SBO
s_0384	Acetate	
s_0467	ATP	

Modifiers

Table 275: Properties of each modifier.

Id	Name	SBO
e_0975	tdcD	0000460
e_0719	ackA	0000460
e_0577	purT	0000460
s_0384	Acetate	
s_0467	ATP	
s_0393	Acetyl phosphate	
s_0421	ADP	

Products

Table 276: Properties of each product.

Id	Name	SBO
s_0393	Acetyl phosphate	
s_0421	ADP	

Kinetic Law

Derived unit contains undeclared units

$$v_{68} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0384} \cdot \left(\frac{[\text{s_0384}]}{\text{ic0384}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0393} \cdot \left(\frac{[\text{s_0393}]}{\text{ic0393}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) \right) \quad (137)$$

Table 277: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.081	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.081	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0384			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0393			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>

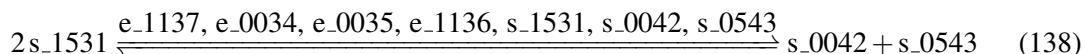
7.69 Reaction r_0227

This is a reversible reaction of one reactant forming two products influenced by seven modifiers.

Name acetolactate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 278: Properties of each reactant.

Id	Name	SBO
s_1531	Pyruvate	

Modifiers

Table 279: Properties of each modifier.

Id	Name	SBO
e_1137	ilvB	0000460
e_0034	ilvI	0000460
e_0035	ilvH	0000460
e_1136	ilvN	0000460
s_1531	Pyruvate	
s_0042	(S)-2-Acetolactate	
s_0543	CO2	

Products

Table 280: Properties of each product.

Id	Name	SBO
s_0042	(S)-2-Acetolactate	
s_0543	CO2	

Kinetic Law

Derived unit contains undeclared units

$$v_{69} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1531} \cdot \left(\frac{[\text{s_1531}]}{\text{ic1531}} \right) + \text{ep0042} \cdot \left(\frac{[\text{s_0042}]}{\text{ic0042}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) \right) \quad (139)$$

Table 281: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.121	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.121	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1531			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0042			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

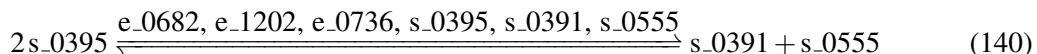
7.70 Reaction r_0230

This is a reversible reaction of one reactant forming two products influenced by six modifiers.

Name acetyl-CoA C-acetyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 282: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	

Modifiers

Table 283: Properties of each modifier.

Id	Name	SBO
e_0682	atoB	0000460
e_1202	fadA	0000460
e_0736	fadI	0000460
s_0395	Acetyl-CoA	
s_0391	Acetoacetyl-CoA	
s_0555	Coenzyme A	

Products

Table 284: Properties of each product.

Id	Name	SBO
s_0391	Acetoacetyl-CoA	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{70} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep0391} \cdot \left(\frac{[\text{s_0391}]}{\text{ic0391}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) \right) \quad (141)$$

Table 285: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0391			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

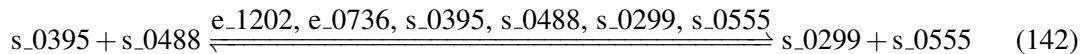
7.71 Reaction r_0231

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name acetyl-CoA C-acyltransferase (butanoyl-CoA) (r)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 286: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0488	Butanoyl-CoA	

Modifiers

Table 287: Properties of each modifier.

Id	Name	SBO
e_1202	fadA	0000460
e_0736	fadI	0000460
s_0395	Acetyl-CoA	
s_0488	Butanoyl-CoA	
s_0299	3-Oxohexanoyl-CoA	
s_0555	Coenzyme A	

Products

Table 288: Properties of each product.

Id	Name	SBO
s_0299	3-Oxohexanoyl-CoA	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{71} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep0488} \cdot \left(\frac{[\text{s_0488}]}{\text{ic0488}} \right) + \text{ep0299} \cdot \left(\frac{[\text{s_0299}]}{\text{ic0299}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) \right) \quad (143)$$

Table 289: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0488			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0299			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

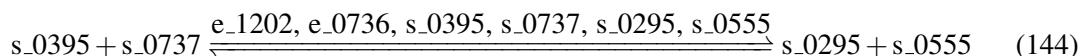
7.72 Reaction r_0232

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name acetyl-CoA C-acyltransferase (decanoyl-CoA) (r)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 290: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0737	Decanoyl-CoA (n-C10:0CoA)	

Modifiers

Table 291: Properties of each modifier.

Id	Name	SBO
e_1202	fadA	0000460
e_0736	fadI	0000460
s_0395	Acetyl-CoA	
s_0737	Decanoyl-CoA (n-C10:0CoA)	
s_0295	3-Oxododecanoyl-CoA	
s_0555	Coenzyme A	

Products

Table 292: Properties of each product.

Id	Name	SBO
s_0295	3-Oxododecanoyl-CoA	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{72} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep0737} \cdot \left(\frac{[\text{s_0737}]}{\text{ic0737}} \right) + \text{ep0295} \cdot \left(\frac{[\text{s_0295}]}{\text{ic0295}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) \right) \quad (145)$$

Table 293: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0737			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0295			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

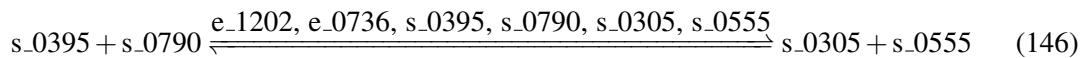
7.73 Reaction r_0233

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name acetyl-CoA C-acyltransferase (dodecanoyl-CoA) (r)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 294: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0790	Dodecanoyl-CoA (n-C12:0CoA)	

Modifiers

Table 295: Properties of each modifier.

Id	Name	SBO
e_1202	fadA	0000460
e_0736	fadI	0000460
s_0395	Acetyl-CoA	
s_0790	Dodecanoyl-CoA (n-C12:0CoA)	
s_0305	3-Oxotetradecanoyl-CoA	
s_0555	Coenzyme A	

Products

Table 296: Properties of each product.

Id	Name	SBO
s_0305	3-Oxotetradecanoyl-CoA	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{73} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep0790} \cdot \left(\frac{[\text{s_0790}]}{\text{ic0790}} \right) + \text{ep0305} \cdot \left(\frac{[\text{s_0305}]}{\text{ic0305}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) \right) \quad (147)$$

Table 297: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0790			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0305			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

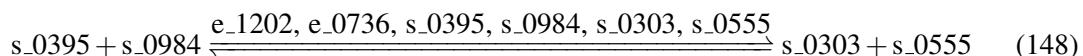
7.74 Reaction r_0234

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name acetyl-CoA C-acyltransferase (hexanoyl-CoA) (r)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 298: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0984	Hexanoyl-CoA (n-C6:0CoA)	

Modifiers

Table 299: Properties of each modifier.

Id	Name	SBO
e_1202	fadA	0000460
e_0736	fadI	0000460
s_0395	Acetyl-CoA	
s_0984	Hexanoyl-CoA (n-C6:0CoA)	
s_0303	3-Oxoctanoyl-CoA	
s_0555	Coenzyme A	

Products

Table 300: Properties of each product.

Id	Name	SBO
s_0303	3-Oxoctanoyl-CoA	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{74} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s}_0395]}{\text{ic0395}} \right) + \text{ep0984} \cdot \left(\frac{[\text{s}_0984]}{\text{ic0984}} \right) + \text{ep0303} \cdot \left(\frac{[\text{s}_0303]}{\text{ic0303}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s}_0555]}{\text{ic0555}} \right) \right) \quad (149)$$

Table 301: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0984			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0303			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

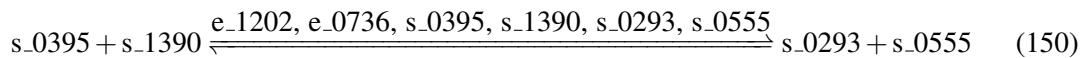
7.75 Reaction r_0235

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name acetyl-CoA C-acyltransferase (octanoyl-CoA) (r)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 302: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_1390	Octanoyl-CoA (n-C8:0CoA)	

Modifiers

Table 303: Properties of each modifier.

Id	Name	SBO
e_1202	fadA	0000460
e_0736	fadI	0000460
s_0395	Acetyl-CoA	
s_1390	Octanoyl-CoA (n-C8:0CoA)	
s_0293	3-Oxodecanoyl-CoA	
s_0555	Coenzyme A	

Products

Table 304: Properties of each product.

Id	Name	SBO
s_0293	3-Oxodecanoyl-CoA	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{75} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep1390} \cdot \left(\frac{[\text{s_1390}]}{\text{ic1390}} \right) + \text{ep0293} \cdot \left(\frac{[\text{s_0293}]}{\text{ic0293}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) \right) \quad (151)$$

Table 305: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1390			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0293			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

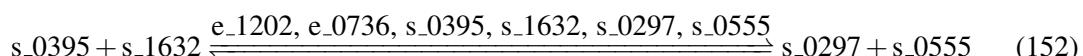
7.76 Reaction r_0236

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name acetyl-CoA C-acyltransferase (tetradecanoyl-CoA) (r)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 306: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_1632	Tetradecanoyl-CoA (n-C14:0CoA)	

Modifiers

Table 307: Properties of each modifier.

Id	Name	SBO
e_1202	fadA	0000460
e_0736	fadI	0000460
s_0395	Acetyl-CoA	
s_1632	Tetradecanoyl-CoA (n-C14:0CoA)	
s_0297	3-Oxohexadecanoyl-CoA	
s_0555	Coenzyme A	

Products

Table 308: Properties of each product.

Id	Name	SBO
s_0297	3-Oxohexadecanoyl-CoA	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{76} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0395 \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep}1632 \cdot \left(\frac{[\text{s_1632}]}{\text{ic1632}} \right) + \text{ep}0297 \cdot \left(\frac{[\text{s_0297}]}{\text{ic0297}} \right) + \text{ep}0555 \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) \right) \quad (153)$$

Table 309: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1632			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0297			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

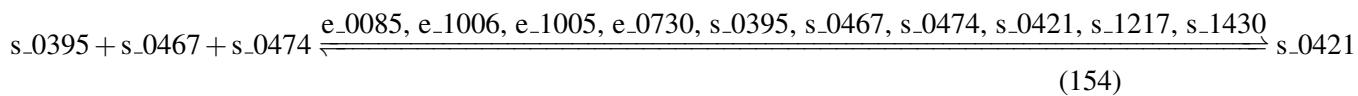
7.77 Reaction r_0237

This is a reversible reaction of three reactants forming three products influenced by ten modifiers.

Name acetyl-CoA carboxylase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 310: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0467	ATP	
s_0474	Bicarbonate	

Modifiers

Table 311: Properties of each modifier.

Id	Name	SBO
e_0085	accA	0000460
e_1006	accC	0000460
e_1005	accB	0000460
e_0730	accD	0000460
s_0395	Acetyl-CoA	
s_0467	ATP	
s_0474	Bicarbonate	
s_0421	ADP	
s_1217	Malonyl-CoA	
s_1430	Phosphate	

Products

Table 312: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1217	Malonyl-CoA	

Id	Name	SBO
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{77} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0474} \cdot \left(\frac{[\text{s_0474}]}{\text{ic0474}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1217} \cdot \left(\frac{[\text{s_1217}]}{\text{ic1217}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (155)$$

Table 313: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0474			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1217			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

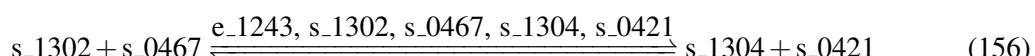
7.78 Reaction r_0243

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name acetylglutamate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 314: Properties of each reactant.

Id	Name	SBO
s_1302	N-Acetyl-L-glutamate	
s_0467	ATP	

Modifiers

Table 315: Properties of each modifier.

Id	Name	SBO
e_1243	argB	0000460
s_1302	N-Acetyl-L-glutamate	
s_0467	ATP	
s_1304	N-Acetyl-L-glutamyl 5-phosphate	
s_0421	ADP	

Products

Table 316: Properties of each product.

Id	Name	SBO
s_1304	N-Acetyl-L-glutamyl 5-phosphate	
s_0421	ADP	

Kinetic Law

Derived unit contains undeclared units

$$v_{78} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1302} \cdot \left(\frac{[\text{s}_1302]}{\text{ic1302}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep1304} \cdot \left(\frac{[\text{s}_1304]}{\text{ic1304}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) \right) \quad (157)$$

Table 317: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1302			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1304			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>

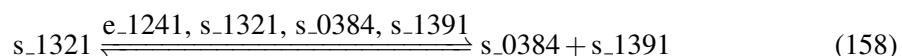
7.79 Reaction r_0244

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name acetylornithine deacetylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 318: Properties of each reactant.

Id	Name	SBO
s_1321	N2-Acetyl-L-ornithine	

Modifiers

Table 319: Properties of each modifier.

Id	Name	SBO
e_1241	argE	0000460
s_1321	N2-Acetyl-L-ornithine	
s_0384	Acetate	
s_1391	Ornithine	

Products

Table 320: Properties of each product.

Id	Name	SBO
s_0384	Acetate	
s_1391	Ornithine	

Kinetic Law

Derived unit contains undeclared units

$$v_{79} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1321} \cdot \left(\frac{[\text{s_1321}]}{\text{ic1321}} \right) + \text{ep0384} \cdot \left(\frac{[\text{s_0384}]}{\text{ic0384}} \right) + \text{ep1391} \cdot \left(\frac{[\text{s_1391}]}{\text{ic1391}} \right) \right) \quad (159)$$

Table 321: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1321			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0384			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1391			-1.000	dimensionless	<input checked="" type="checkbox"/>

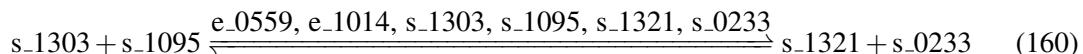
7.80 Reaction r_0245

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name acetylornithine transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 322: Properties of each reactant.

Id	Name	SBO
s_1303	N-Acetyl-L-glutamate 5-semialdehyde	
s_1095	L-Glutamate	

Modifiers

Table 323: Properties of each modifier.

Id	Name	SBO
e_0559	astC	0000460
e_1014	argD	0000460
s_1303	N-Acetyl-L-glutamate 5-semialdehyde	
s_1095	L-Glutamate	
s_1321	N2-Acetyl-L-ornithine	
s_0233	2-Oxoglutarate	

Products

Table 324: Properties of each product.

Id	Name	SBO
s_1321	N2-Acetyl-L-ornithine	
s_0233	2-Oxoglutarate	

Kinetic Law

Derived unit contains undeclared units

$$v_{80} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1303} \cdot \left(\frac{[\text{s}_1303]}{\text{ic1303}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s}_1095]}{\text{ic1095}} \right) + \text{ep1321} \cdot \left(\frac{[\text{s}_1321]}{\text{ic1321}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s}_0233]}{\text{ic0233}} \right) \right) \quad (161)$$

Table 325: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1303			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1321			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>

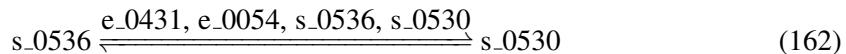
7.81 Reaction r_0246

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name aconitase (half-reaction A, Citrate hydro-lyase)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 326: Properties of each reactant.

Id	Name	SBO
s_{_0536}	Citrate	

Modifiers

Table 327: Properties of each modifier.

Id	Name	SBO
e_{_0431}	acnA	0000460
e_{_0054}	acnB	0000460
s_{_0536}	Citrate	
s_{_0530}	cis-Aconitate	

Product

Table 328: Properties of each product.

Id	Name	SBO
s_{_0530}	cis-Aconitate	

Kinetic Law

Derived unit contains undeclared units

$$v_{81} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0536} \cdot \left(\frac{[s_{_0536}]}{\text{ic0536}} \right) + \text{ep0530} \cdot \left(\frac{[s_{_0530}]}{\text{ic0530}} \right) \right) \quad (163)$$

Table 329: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.149	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.149	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0536			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0530			-1.000	dimensionless	<input checked="" type="checkbox"/>

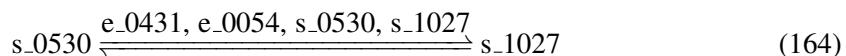
7.82 Reaction r_0247

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name aconitase (half-reaction B, Isocitrate hydro-lyase)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 330: Properties of each reactant.

Id	Name	SBO
s_0530	cis-Aconitate	

Modifiers

Table 331: Properties of each modifier.

Id	Name	SBO
e_0431	acnA	0000460
e_0054	acnB	0000460
s_0530	cis-Aconitate	
s_1027	Isocitrate	

Product

Table 332: Properties of each product.

Id	Name	SBO
s_1027	Isocitrate	

Kinetic Law

Derived unit contains undeclared units

$$v_{82} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0530 \cdot \left(\frac{[\text{s_0530}]}{\text{ic}0530} \right) + \text{ep}1027 \cdot \left(\frac{[\text{s_1027}]}{\text{ic}1027} \right) \right) \quad (165)$$

Table 333: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.149	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.149	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0530			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1027			-1.000	dimensionless	<input checked="" type="checkbox"/>

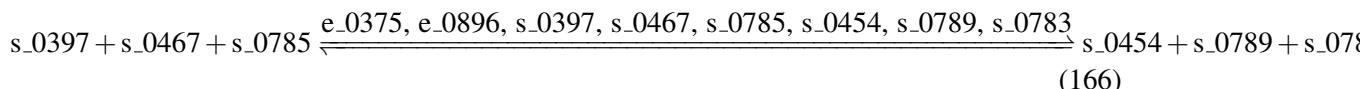
7.83 Reaction r_0257

This is a reversible reaction of three reactants forming three products influenced by eight modifiers.

Name acyl-[acyl-carrier-protein] synthetase (n-C12:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 334: Properties of each reactant.

Id	Name	SBO
s_0397	acyl carrier protein	
s_0467	ATP	
s_0785	Dodecanoate (n-C12:0)	

Modifiers

Table 335: Properties of each modifier.

Id	Name	SBO
e_0375	acpP	0000460
e_0896	aas	0000460
s_0397	acyl carrier protein	
s_0467	ATP	
s_0785	Dodecanoate (n-C12:0)	
s_0454	AMP	
s_0789	Dodecanoyl-ACP (n-C12:0ACP)	
s_0783	Diphosphate	

Products

Table 336: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_0789	Dodecanoyl-ACP (n-C12:0ACP)	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{83} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0397} \cdot \left(\frac{[\text{s_0397}]}{\text{ic0397}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0785} \cdot \left(\frac{[\text{s_0785}]}{\text{ic0785}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep0789} \cdot \left(\frac{[\text{s_0789}]}{\text{ic0789}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (167)$$

Table 337: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0397			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0785			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0789			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

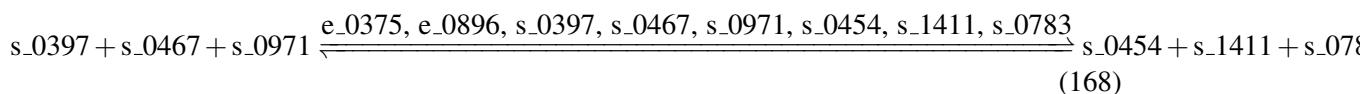
7.84 Reaction r_0259

This is a reversible reaction of three reactants forming three products influenced by eight modifiers.

Name acyl-[acyl-carrier-protein] synthetase (n-C16:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 338: Properties of each reactant.

Id	Name	SBO
s_0397	acyl carrier protein	
s_0467	ATP	
s_0971	Hexadecanoate (n-C16:0)	

Modifiers

Table 339: Properties of each modifier.

Id	Name	SBO
e_0375	acpP	0000460
e_0896	aas	0000460
s_0397	acyl carrier protein	
s_0467	ATP	
s_0971	Hexadecanoate (n-C16:0)	
s_0454	AMP	
s_1411	Palmitoyl-ACP (n-C16:0ACP)	
s_0783	Diphosphate	

Products

Table 340: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_1411	Palmitoyl-ACP (n-C16:0ACP)	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{84} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0397 \cdot \left(\frac{[\text{s_0397}]}{\text{ic}0397} \right) + \text{ep}0467 \cdot \left(\frac{[\text{s_0467}]}{\text{ic}0467} \right) + \text{ep}0971 \cdot \left(\frac{[\text{s_0971}]}{\text{ic}0971} \right) + \text{ep}0454 \cdot \left(\frac{[\text{s_0454}]}{\text{ic}0454} \right) + \text{ep}1411 \cdot \left(\frac{[\text{s_1411}]}{\text{ic}1411} \right) + \text{ep}0783 \cdot \left(\frac{[\text{s_0783}]}{\text{ic}0783} \right) \right) \quad (169)$$

Table 341: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.018	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.018	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0397			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0971			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1411			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

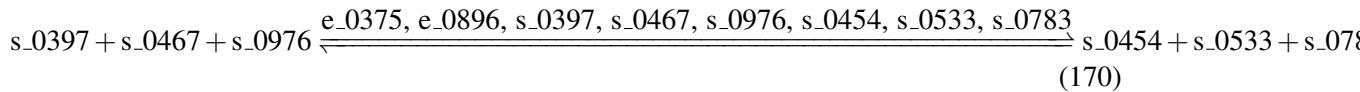
7.85 Reaction r_0260

This is a reversible reaction of three reactants forming three products influenced by eight modifiers.

Name acyl-[acyl-carrier-protein] synthetase (n-C16:1)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 342: Properties of each reactant.

Id	Name	SBO
s_0397	acyl carrier protein	
s_0467	ATP	
s_0976	Hexadecenoate (n-C16:1)	

Modifiers

Table 343: Properties of each modifier.

Id	Name	SBO
e_0375	acpP	0000460
e_0896	aas	0000460
s_0397	acyl carrier protein	
s_0467	ATP	
s_0976	Hexadecenoate (n-C16:1)	
s_0454	AMP	
s_0533	cis-hexadec-9-enoyl-[acyl-carrier protein] (n-C16:1)	
s_0783	Diphosphate	

Products

Table 344: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_0533	cis-hexadec-9-enoyl-[acyl-carrier protein] (n-C16:1)	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{85} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0397} \cdot \left(\frac{[\text{s_0397}]}{\text{ic0397}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0976} \cdot \left(\frac{[\text{s_0976}]}{\text{ic0976}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep0533} \cdot \left(\frac{[\text{s_0533}]}{\text{ic0533}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (171)$$

Table 345: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0397			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0976			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0533			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

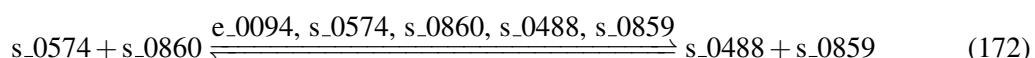
7.86 Reaction r_0266

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name acyl-CoA dehydrogenase (butanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 346: Properties of each reactant.

Id	Name	SBO
s_0574	Crotonoyl-CoA	
s_0860	Flavin adenine dinucleotide reduced	

Modifiers

Table 347: Properties of each modifier.

Id	Name	SBO
e_0094	fadE	0000460
s_0574	Crotonoyl-CoA	
s_0860	Flavin adenine dinucleotide reduced	
s_0488	Butanoyl-CoA	
s_0859	Flavin adenine dinucleotide oxidized	

Products

Table 348: Properties of each product.

Id	Name	SBO
s_0488	Butanoyl-CoA	
s_0859	Flavin adenine dinucleotide oxidized	

Kinetic Law

Derived unit contains undeclared units

$$v_{86} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0574} \cdot \left(\frac{[\text{s}_0574]}{\text{ic0574}} \right) + \text{ep0860} \cdot \left(\frac{[\text{s}_0860]}{\text{ic0860}} \right) + \text{ep0488} \cdot \left(\frac{[\text{s}_0488]}{\text{ic0488}} \right) + \text{ep0859} \cdot \left(\frac{[\text{s}_0859]}{\text{ic0859}} \right) \right) \quad (173)$$

Table 349: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0574			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0488			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>

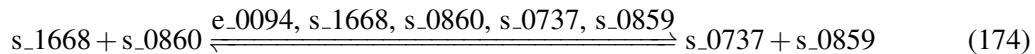
7.87 Reaction r_0267

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name acyl-CoA dehydrogenase (decanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 350: Properties of each reactant.

Id	Name	SBO
s_{_1668}	trans-Dec-2-enoyl-CoA	
s_{_0860}	Flavin adenine dinucleotide reduced	

Modifiers

Table 351: Properties of each modifier.

Id	Name	SBO
e_{_0094}	fadE	0000460
s_{_1668}	trans-Dec-2-enoyl-CoA	
s_{_0860}	Flavin adenine dinucleotide reduced	
s_{_0737}	Decanoyl-CoA (n-C10:0CoA)	
s_{_0859}	Flavin adenine dinucleotide oxidized	

Products

Table 352: Properties of each product.

Id	Name	SBO
s_{_0737}	Decanoyl-CoA (n-C10:0CoA)	
s_{_0859}	Flavin adenine dinucleotide oxidized	

Kinetic Law

Derived unit contains undeclared units

$$v_{87} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1668} \cdot \left(\frac{[s_{_1668}]}{\text{ic1668}} \right) + \text{ep0860} \cdot \left(\frac{[s_{_0860}]}{\text{ic0860}} \right) + \text{ep0737} \cdot \left(\frac{[s_{_0737}]}{\text{ic0737}} \right) + \text{ep0859} \cdot \left(\frac{[s_{_0859}]}{\text{ic0859}} \right) \right) \quad (175)$$

Table 353: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1668			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0737			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>

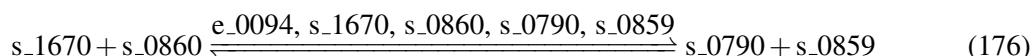
7.88 Reaction r_0268

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name acyl-CoA dehydrogenase (dodecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 354: Properties of each reactant.

Id	Name	SBO
s_1670	trans-Dodec-2-enoyl-CoA	
s_0860	Flavin adenine dinucleotide reduced	

Modifiers

Table 355: Properties of each modifier.

Id	Name	SBO
e_0094	fadE	0000460
s_1670	trans-Dodec-2-enoyl-CoA	
s_0860	Flavin adenine dinucleotide reduced	
s_0790	Dodecanoyl-CoA (n-C12:0CoA)	
s_0859	Flavin adenine dinucleotide oxidized	

Products

Table 356: Properties of each product.

Id	Name	SBO
s_0790	Dodecanoyl-CoA (n-C12:0CoA)	
s_0859	Flavin adenine dinucleotide oxidized	

Kinetic Law

Derived unit contains undeclared units

$$v_{88} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1670} \cdot \left(\frac{[\text{s_1670}]}{\text{ic1670}} \right) + \text{ep0860} \cdot \left(\frac{[\text{s_0860}]}{\text{ic0860}} \right) + \text{ep0790} \cdot \left(\frac{[\text{s_0790}]}{\text{ic0790}} \right) + \text{ep0859} \cdot \left(\frac{[\text{s_0859}]}{\text{ic0859}} \right) \right) \quad (177)$$

Table 357: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1670			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0790			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>

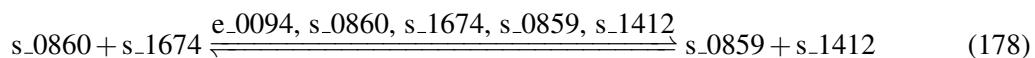
7.89 Reaction r_0269

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name acyl-CoA dehydrogenase (hexadecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 358: Properties of each reactant.

Id	Name	SBO
s_0860	Flavin adenine dinucleotide reduced	
s_1674	trans-Hexadec-2-enoyl-CoA	

Modifiers

Table 359: Properties of each modifier.

Id	Name	SBO
e_0094	fadE	0000460
s_0860	Flavin adenine dinucleotide reduced	
s_1674	trans-Hexadec-2-enoyl-CoA	
s_0859	Flavin adenine dinucleotide oxidized	
s_1412	Palmitoyl-CoA (n-C16:0CoA)	

Products

Table 360: Properties of each product.

Id	Name	SBO
s_0859	Flavin adenine dinucleotide oxidized	
s_1412	Palmitoyl-CoA (n-C16:0CoA)	

Kinetic Law

Derived unit contains undeclared units

$$v_{89} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0860 \cdot \left(\frac{[\text{s}_0860]}{\text{ic}0860} \right) + \text{ep}1674 \cdot \left(\frac{[\text{s}_1674]}{\text{ic}1674} \right) + \text{ep}0859 \cdot \left(\frac{[\text{s}_0859]}{\text{ic}0859} \right) + \text{ep}1412 \cdot \left(\frac{[\text{s}_1412]}{\text{ic}1412} \right) \right) \quad (179)$$

Table 361: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.018	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.018	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1674			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1412			-1.000	dimensionless	<input checked="" type="checkbox"/>

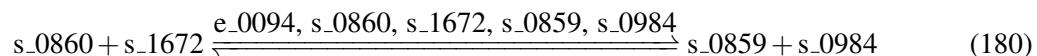
7.90 Reaction r_0270

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name acyl-CoA dehydrogenase (hexanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 362: Properties of each reactant.

Id	Name	SBO
s_{_0860}	Flavin adenine dinucleotide reduced	
s_{_1672}	trans-Hex-2-enoyl-CoA	

Modifiers

Table 363: Properties of each modifier.

Id	Name	SBO
e_{_0094}	fadE	0000460
s_{_0860}	Flavin adenine dinucleotide reduced	
s_{_1672}	trans-Hex-2-enoyl-CoA	
s_{_0859}	Flavin adenine dinucleotide oxidized	
s_{_0984}	Hexanoyl-CoA (n-C6:0CoA)	

Products

Table 364: Properties of each product.

Id	Name	SBO
s_0859	Flavin adenine dinucleotide oxidized	
s_0984	Hexanoyl-CoA (n-C6:0CoA)	

Kinetic Law

Derived unit contains undeclared units

$$v_{90} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0860} \cdot \left(\frac{[\text{s_0860}]}{\text{ic0860}} \right) + \text{ep1672} \cdot \left(\frac{[\text{s_1672}]}{\text{ic1672}} \right) + \text{ep0859} \cdot \left(\frac{[\text{s_0859}]}{\text{ic0859}} \right) + \text{ep0984} \cdot \left(\frac{[\text{s_0984}]}{\text{ic0984}} \right) \right) \quad (181)$$

Table 365: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1672			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0984			-1.000	dimensionless	<input checked="" type="checkbox"/>

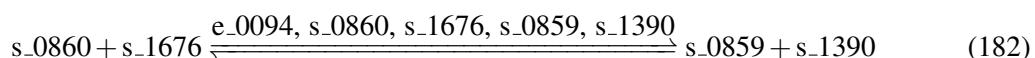
7.91 Reaction r_0272

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name acyl-CoA dehydrogenase (octanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 366: Properties of each reactant.

Id	Name	SBO
s_0860	Flavin adenine dinucleotide reduced	
s_1676	trans-Oct-2-enoyl-CoA	

Modifiers

Table 367: Properties of each modifier.

Id	Name	SBO
e_0094	fadE	0000460
s_0860	Flavin adenine dinucleotide reduced	
s_1676	trans-Oct-2-enoyl-CoA	
s_0859	Flavin adenine dinucleotide oxidized	
s_1390	Octanoyl-CoA (n-C8:0CoA)	

Products

Table 368: Properties of each product.

Id	Name	SBO
s_0859	Flavin adenine dinucleotide oxidized	
s_1390	Octanoyl-CoA (n-C8:0CoA)	

Kinetic Law

Derived unit contains undeclared units

$$v_{91} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0860} \cdot \left(\frac{[\text{s}_0860]}{\text{ic0860}} \right) + \text{ep1676} \cdot \left(\frac{[\text{s}_1676]}{\text{ic1676}} \right) + \text{ep0859} \cdot \left(\frac{[\text{s}_0859]}{\text{ic0859}} \right) + \text{ep1390} \cdot \left(\frac{[\text{s}_1390]}{\text{ic1390}} \right) \right) \quad (183)$$

Table 369: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.049	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1676			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1390			-1.000	dimensionless	<input checked="" type="checkbox"/>

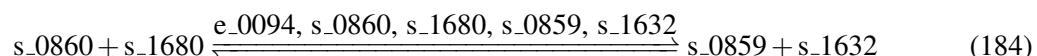
7.92 Reaction r_0273

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name acyl-CoA dehydrogenase (tetradecanoyl-CoA)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 370: Properties of each reactant.

Id	Name	SBO
s_{_0860}	Flavin adenine dinucleotide reduced	
s_{_1680}	trans-Tetradec-2-enoyl-CoA	

Modifiers

Table 371: Properties of each modifier.

Id	Name	SBO
e_{_0094}	fadE	0000460
s_{_0860}	Flavin adenine dinucleotide reduced	
s_{_1680}	trans-Tetradec-2-enoyl-CoA	
s_{_0859}	Flavin adenine dinucleotide oxidized	
s_{_1632}	Tetradecanoyl-CoA (n-C14:0CoA)	

Products

Table 372: Properties of each product.

Id	Name	SBO
s_0859	Flavin adenine dinucleotide oxidized	
s_1632	Tetradecanoyl-CoA (n-C14:0CoA)	

Kinetic Law

Derived unit contains undeclared units

$$v_{92} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0860 \cdot \left(\frac{[\text{s_0860}]}{\text{ic0860}} \right) + \text{ep}1680 \cdot \left(\frac{[\text{s_1680}]}{\text{ic1680}} \right) + \text{ep}0859 \cdot \left(\frac{[\text{s_0859}]}{\text{ic0859}} \right) + \text{ep}1632 \cdot \left(\frac{[\text{s_1632}]}{\text{ic1632}} \right) \right) \quad (185)$$

Table 373: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.039	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1680			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1632			-1.000	dimensionless	<input checked="" type="checkbox"/>

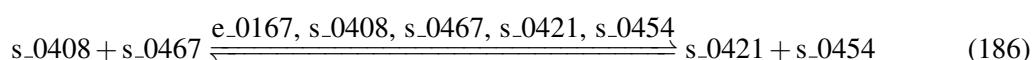
7.93 Reaction r_0292

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name adenosine kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 374: Properties of each reactant.

Id	Name	SBO
s_0408	Adenosine	
s_0467	ATP	

Modifiers

Table 375: Properties of each modifier.

Id	Name	SBO
e_0167	adk	0000460
s_0408	Adenosine	
s_0467	ATP	
s_0421	ADP	
s_0454	AMP	

Products

Table 376: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0454	AMP	

Kinetic Law

Derived unit contains undeclared units

$$v_{93} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0408} \cdot \left(\frac{[\text{s_0408}]}{\text{ic0408}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) \right) \quad (187)$$

Table 377: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.32217621027432 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.32217621027432 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0408			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>

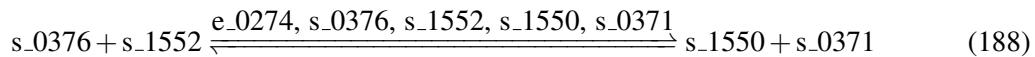
7.94 Reaction r_0297

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name adenosylmethionine-8-amino-7-oxononanoate transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 378: Properties of each reactant.

Id	Name	SBO
s_0376	8-Amino-7-oxononanoate	
s_1552	S-Adenosyl-L-methionine	

Modifiers

Table 379: Properties of each modifier.

Id	Name	SBO
e_0274	bioA	0000460
s_0376	8-Amino-7-oxononanoate	
s_1552	S-Adenosyl-L-methionine	
s_1550	S-Adenosyl-4-methylthio-2-oxobutanoate	
s_0371	7,8-Diaminononanoate	

Products

Table 380: Properties of each product.

Id	Name	SBO
s_1550	S-Adenosyl-4-methylthio-2-oxobutanoate	
s_0371	7,8-Diaminononanoate	

Kinetic Law

Derived unit contains undeclared units

$$v_{94} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0376 \cdot \left(\frac{[\text{s_0376}]}{\text{ic0376}} \right) + \text{ep}1552 \cdot \left(\frac{[\text{s_1552}]}{\text{ic1552}} \right) + \text{ep}1550 \cdot \left(\frac{[\text{s_1550}]}{\text{ic1550}} \right) + \text{ep}0371 \cdot \left(\frac{[\text{s_0371}]}{\text{ic0371}} \right) \right) \quad (189)$$

Table 381: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0376			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1552			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1550			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0371			-1.000	dimensionless	<input checked="" type="checkbox"/>

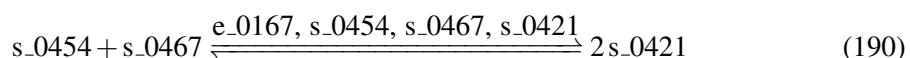
7.95 Reaction r_0301

This is a reversible reaction of two reactants forming one product influenced by four modifiers.

Name adenylate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 382: Properties of each reactant.

Id	Name	SBO
s_0454	AMP	
s_0467	ATP	

Modifiers

Table 383: Properties of each modifier.

Id	Name	SBO
e_0167	adk	0000460
s_0454	AMP	
s_0467	ATP	
s_0421	ADP	

Product

Table 384: Properties of each product.

Id	Name	SBO
s_0421	ADP	

Kinetic Law

Derived unit contains undeclared units

$$v_{95} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0454} \cdot \left(\frac{[\text{s}_0454]}{\text{ic0454}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) \right) \quad (191)$$

Table 385: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.362	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.362	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0454			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-2.000	dimensionless	<input checked="" type="checkbox"/>

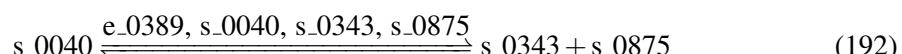
7.96 Reaction r_0302

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name adenylosuccinate lyase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 386: Properties of each reactant.

Id	Name	SBO
s_{_0040}	(S)-2-[5-Amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxamido]succinate	

Modifiers

Table 387: Properties of each modifier.

Id	Name	SBO
e_{_0389}	purB	0000460
s_{_0040}	(S)-2-[5-Amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxamido]succinate	
s_{_0343}	5-Amino-1-(5-Phospho-D-ribosyl)imidazole-4-carboxamide	
s_{_0875}	Fumarate	

Products

Table 388: Properties of each product.

Id	Name	SBO
s_{_0343}	5-Amino-1-(5-Phospho-D-ribosyl)imidazole-4-carboxamide	
s_{_0875}	Fumarate	

Kinetic Law

Derived unit contains undeclared units

$$v_{96} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep0040} \cdot \left(\frac{[\text{s_0040}]}{\text{ic0040}} \right) + \text{ep0343} \cdot \left(\frac{[\text{s_0343}]}{\text{ic0343}} \right) + \text{ep0875} \cdot \left(\frac{[\text{s_0875}]}{\text{ic0875}} \right) \right) \quad (193)$$

Table 389: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0040			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0343			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0875			-1.000	dimensionless	<input checked="" type="checkbox"/>

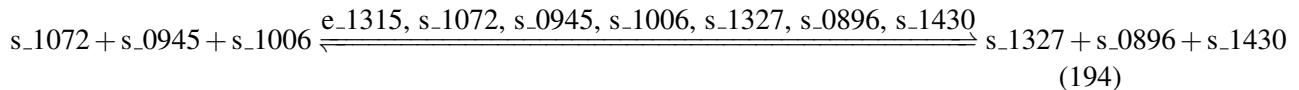
7.97 Reaction r_0303

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name adenylosuccinate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 390: Properties of each reactant.

Id	Name	SBO
s_1072	L-Aspartate	
s_0945	GTP	
s_1006	IMP	

Modifiers

Table 391: Properties of each modifier.

Id	Name	SBO
e_1315	purA	0000460
s_1072	L-Aspartate	
s_0945	GTP	
s_1006	IMP	
s_1327	N6-(1,2-Dicarboxyethyl)-AMP	
s_0896	GDP	
s_1430	Phosphate	

Products

Table 392: Properties of each product.

Id	Name	SBO
s_1327	N6-(1,2-Dicarboxyethyl)-AMP	
s_0896	GDP	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{97} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1072} \cdot \left(\frac{[\text{s}_1072]}{\text{ic1072}} \right) + \text{ep0945} \cdot \left(\frac{[\text{s}_0945]}{\text{ic0945}} \right) + \text{ep1006} \cdot \left(\frac{[\text{s}_1006]}{\text{ic1006}} \right) + \text{ep1327} \cdot \left(\frac{[\text{s}_1327]}{\text{ic1327}} \right) + \text{ep0896} \cdot \left(\frac{[\text{s}_0896]}{\text{ic0896}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) \right) \quad (195)$$

Table 393: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1072			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0945			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1006			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1327			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0896			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

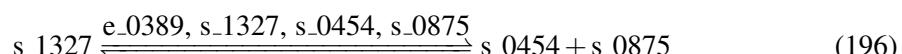
7.98 Reaction r_0304

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name adenylysuccinate lyase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 394: Properties of each reactant.

Id	Name	SBO
s_1327	N6-(1,2-Dicarboxyethyl)-AMP	

Modifiers

Table 395: Properties of each modifier.

Id	Name	SBO
e_0389	purB	0000460
s_1327	N6-(1,2-Dicarboxyethyl)-AMP	
s_0454	AMP	
s_0875	Fumarate	

Products

Table 396: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_0875	Fumarate	

Kinetic Law

Derived unit contains undeclared units

$$v_{98} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep1327} \cdot \left(\frac{[\text{s_1327}]}{\text{ic1327}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep0875} \cdot \left(\frac{[\text{s_0875}]}{\text{ic0875}} \right) \right) \quad (197)$$

Table 397: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1327			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0875			-1.000	dimensionless	<input checked="" type="checkbox"/>

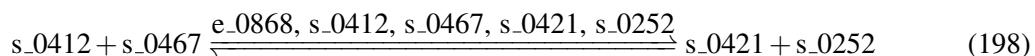
7.99 Reaction r_0305

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name adenylyl-sulfate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 398: Properties of each reactant.

Id	Name	SBO
s_0412	Adenosine 5'-phosphosulfate	
s_0467	ATP	

Modifiers

Table 399: Properties of each modifier.

Id	Name	SBO
e_0868	cysC	0000460
s_0412	Adenosine 5'-phosphosulfate	

Id	Name	SBO
s_0467	ATP	
s_0421	ADP	
s_0252	3'-Phosphoadenylyl sulfate	

Products

Table 400: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0252	3'-Phosphoadenylyl sulfate	

Kinetic Law

Derived unit contains undeclared units

$$v_{99} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0412} \cdot \left(\frac{[\text{s}_0412]}{\text{ic0412}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep0252} \cdot \left(\frac{[\text{s}_0252]}{\text{ic0252}} \right) \right) \quad (199)$$

Table 401: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0412			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0252			-1.000	dimensionless	<input checked="" type="checkbox"/>

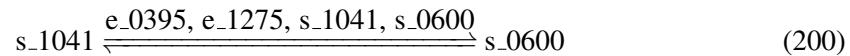
7.100 Reaction r_0310

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name alanine racemase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 402: Properties of each reactant.

Id	Name	SBO
s_1041	L-Alanine	

Modifiers

Table 403: Properties of each modifier.

Id	Name	SBO
e_0395	dadX	0000460
e_1275	alr	0000460
s_1041	L-Alanine	
s_0600	D-Alanine	

Product

Table 404: Properties of each product.

Id	Name	SBO
s_0600	D-Alanine	

Kinetic Law

Derived unit contains undeclared units

$$v_{100} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1041} \cdot \left(\frac{[s_{_1041}]}{\text{ic1041}} \right) + \text{ep0600} \cdot \left(\frac{[s_{_0600}]}{\text{ic0600}} \right) \right) \quad (201)$$

Table 405: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.006	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.006	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1041			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0600			-1.000	dimensionless	<input checked="" type="checkbox"/>

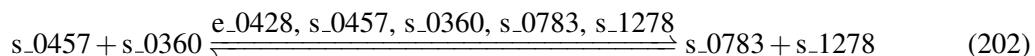
7.101 Reaction r_0348

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name anthranilate phosphoribosyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 406: Properties of each reactant.

Id	Name	SBO
s_0457	Anthraniate	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	

Modifiers

Table 407: Properties of each modifier.

Id	Name	SBO
e_0428	trpD	0000460
s_0457	Anthraniate	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	
s_0783	Diphosphate	
s_1278	N-(5-Phospho-D-ribosyl)anthranilate	

Products

Table 408: Properties of each product.

Id	Name	SBO
s_0783	Diphosphate	

Id	Name	SBO
s_1278	N-(5-Phospho-D-ribosyl)anthranilate	

Kinetic Law

Derived unit contains undeclared units

$$v_{101} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0457} \cdot \left(\frac{[\text{s_0457}]}{\text{ic0457}} \right) + \text{ep0360} \cdot \left(\frac{[\text{s_0360}]}{\text{ic0360}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) + \text{ep1278} \cdot \left(\frac{[\text{s_1278}]}{\text{ic1278}} \right) \right) \quad (203)$$

Table 409: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0457			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0360			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1278			-1.000	dimensionless	<input checked="" type="checkbox"/>

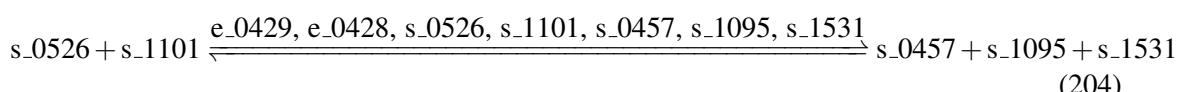
7.102 Reaction r_0349

This is a reversible reaction of two reactants forming three products influenced by seven modifiers.

Name anthranilate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 410: Properties of each reactant.

Id	Name	SBO
s_0526	chorismate	
s_1101	L-Glutamine	

Modifiers

Table 411: Properties of each modifier.

Id	Name	SBO
e_0429	trpE	0000460
e_0428	trpD	0000460
s_0526	chorismate	
s_1101	L-Glutamine	
s_0457	Anthranilate	
s_1095	L-Glutamate	
s_1531	Pyruvate	

Products

Table 412: Properties of each product.

Id	Name	SBO
s_0457	Anthranilate	
s_1095	L-Glutamate	
s_1531	Pyruvate	

Kinetic Law

Derived unit contains undeclared units

$$v_{102} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0526 \cdot \left(\frac{[\text{s_0526}]}{\text{ic}0526} \right) + \text{ep}1101 \cdot \left(\frac{[\text{s_1101}]}{\text{ic}1101} \right) + \text{ep}0457 \cdot \left(\frac{[\text{s_0457}]}{\text{ic}0457} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s_1095}]}{\text{ic}1095} \right) + \text{ep}1531 \cdot \left(\frac{[\text{s_1531}]}{\text{ic}1531} \right) \right) \quad (205)$$

Table 413: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0526			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1101			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0457			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			-1.000	dimensionless	<input checked="" type="checkbox"/>

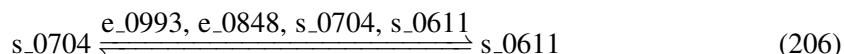
7.103 Reaction r_0355

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name arabinose-5-phosphate isomerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 414: Properties of each reactant.

Id	Name	SBO
s_0704	D-Ribulose 5-phosphate	

Modifiers

Table 415: Properties of each modifier.

Id	Name	SBO
e_0993	kdsD	0000460
e_0848	gutQ	0000460
s_0704	D-Ribulose 5-phosphate	
s_0611	D-Arabinose 5-phosphate	

Product

Table 416: Properties of each product.

Id	Name	SBO
s_0611	D-Arabinose 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{103} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0704} \cdot \left(\frac{[\text{s}_0704]}{\text{ic0704}} \right) + \text{ep0611} \cdot \left(\frac{[\text{s}_0611]}{\text{ic0611}} \right) \right) \quad (207)$$

Table 417: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0704			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0611			-1.000	dimensionless	<input checked="" type="checkbox"/>

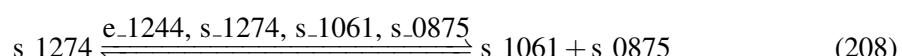
7.104 Reaction r_0360

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name argininosuccinate lyase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 418: Properties of each reactant.

Id	Name	SBO
s_1274	N(omega)-(L-Arginino)succinate	

Modifiers

Table 419: Properties of each modifier.

Id	Name	SBO
e_1244	argH	0000460
s_1274	N(omega)-(L-Arginino)succinate	
s_1061	L-Arginine	
s_0875	Fumarate	

Products

Table 420: Properties of each product.

Id	Name	SBO
s_1061	L-Arginine	
s_0875	Fumarate	

Kinetic Law

Derived unit contains undeclared units

$$v_{104} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1274} \cdot \left(\frac{[\text{s}_1274]}{\text{ic1274}} \right) + \text{ep1061} \cdot \left(\frac{[\text{s}_1061]}{\text{ic1061}} \right) + \text{ep0875} \cdot \left(\frac{[\text{s}_0875]}{\text{ic0875}} \right) \right) \quad (209)$$

Table 421: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1274			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1061			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0875			-1.000	dimensionless	<input checked="" type="checkbox"/>

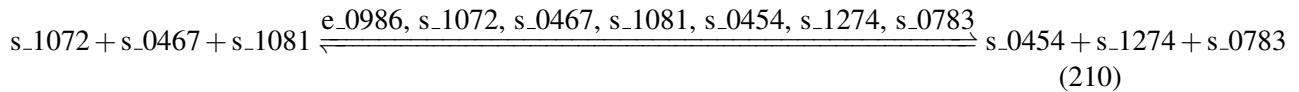
7.105 Reaction r_0361

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name argininosuccinate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 422: Properties of each reactant.

Id	Name	SBO
s_{_1072}	L-Aspartate	
s_{_0467}	ATP	
s_{_1081}	L-Citrulline	

Modifiers

Table 423: Properties of each modifier.

Id	Name	SBO
e_{_0986}	argG	0000460
s_{_1072}	L-Aspartate	
s_{_0467}	ATP	
s_{_1081}	L-Citrulline	
s_{_0454}	AMP	
s_{_1274}	N(omega)-(L-Arginino)succinate	
s_{_0783}	Diphosphate	

Products

Table 424: Properties of each product.

Id	Name	SBO
s_{_0454}	AMP	
s_{_1274}	N(omega)-(L-Arginino)succinate	
s_{_0783}	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{105} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}1072 \cdot \left(\frac{[\text{s_1072}]}{\text{ic1072}} \right) + \text{ep}0467 \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep}1081 \cdot \left(\frac{[\text{s_1081}]}{\text{ic1081}} \right) + \text{ep}0454 \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep}1274 \cdot \left(\frac{[\text{s_1274}]}{\text{ic1274}} \right) + \text{ep}0783 \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (211)$$

Table 425: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1072			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1081			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1274			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

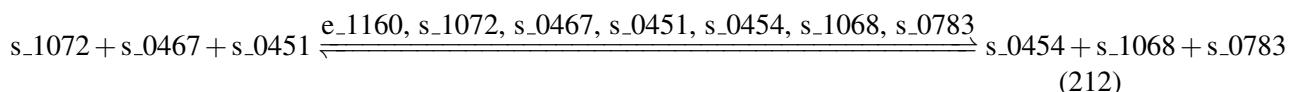
7.106 Reaction r_0365

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name asparagine synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 426: Properties of each reactant.

Id	Name	SBO
s_1072	L-Aspartate	
s_0467	ATP	
s_0451	Ammonium	

Modifiers

Table 427: Properties of each modifier.

Id	Name	SBO
e_1160	asnA	0000460
s_1072	L-Aspartate	
s_0467	ATP	
s_0451	Ammonium	
s_0454	AMP	
s_1068	L-Asparagine	
s_0783	Diphosphate	

Products

Table 428: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_1068	L-Asparagine	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{106} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1072} \cdot \left(\frac{[\text{s}_1072]}{\text{ic1072}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0451} \cdot \left(\frac{[\text{s}_0451]}{\text{ic0451}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s}_0454]}{\text{ic0454}} \right) + \text{ep1068} \cdot \left(\frac{[\text{s}_1068]}{\text{ic1068}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (213)$$

Table 429: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.033	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.033	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1072			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1068			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

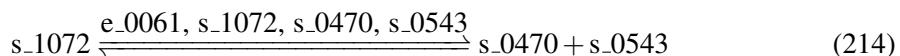
7.107 Reaction r_0367

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name aspartate 1-decarboxylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 430: Properties of each reactant.

Id	Name	SBO
s_{-1072}	L-Aspartate	

Modifiers

Table 431: Properties of each modifier.

Id	Name	SBO
e_{-0061}	panD	0000460
s_{-1072}	L-Aspartate	
s_{-0470}	beta-Alanine	
s_{-0543}	CO2	

Products

Table 432: Properties of each product.

Id	Name	SBO
s_{-0470}	beta-Alanine	
s_{-0543}	CO2	

Kinetic Law

Derived unit contains undeclared units

$$v_{107} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}1072 \cdot \left(\frac{[\text{s_1072}]}{\text{ic1072}} \right) + \text{ep}0470 \cdot \left(\frac{[\text{s_0470}]}{\text{ic0470}} \right) + \text{ep}0543 \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) \right) \quad (215)$$

Table 433: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388811725 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388811725 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1072			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0470			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

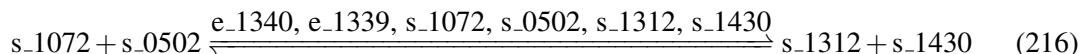
7.108 Reaction r_0368

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name aspartate carbamoyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 434: Properties of each reactant.

Id	Name	SBO
s_1072	L-Aspartate	
s_0502	Carbamoyl phosphate	

Modifiers

Table 435: Properties of each modifier.

Id	Name	SBO
e_1340	pyrB	0000460
e_1339	pyrI	0000460
s_1072	L-Aspartate	
s_0502	Carbamoyl phosphate	
s_1312	N-Carbamoyl-L-aspartate	
s_1430	Phosphate	

Products

Table 436: Properties of each product.

Id	Name	SBO
s_1312	N-Carbamoyl-L-aspartate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{108} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1072} \cdot \left(\frac{[\text{s}_1072]}{\text{ic1072}} \right) + \text{ep0502} \cdot \left(\frac{[\text{s}_0502]}{\text{ic0502}} \right) + \text{ep1312} \cdot \left(\frac{[\text{s}_1312]}{\text{ic1312}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) \right) \quad (217)$$

Table 437: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.046	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.046	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1072			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0502			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1312			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

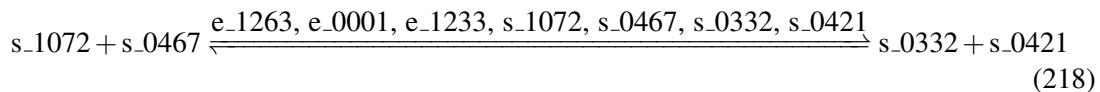
7.109 Reaction r_0369

This is a reversible reaction of two reactants forming two products influenced by seven modifiers.

Name aspartate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 438: Properties of each reactant.

Id	Name	SBO
s_1072	L-Aspartate	
s_0467	ATP	

Modifiers

Table 439: Properties of each modifier.

Id	Name	SBO
e_1263	lysC	0000460
e_0001	thrA	0000460
e_1233	metL	0000460
s_1072	L-Aspartate	
s_0467	ATP	
s_0332	4-Phospho-L-aspartate	
s_0421	ADP	

Products

Table 440: Properties of each product.

Id	Name	SBO
s_0332	4-Phospho-L-aspartate	
s_0421	ADP	

Kinetic Law

Derived unit contains undeclared units

$$v_{109} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1072} \cdot \left(\frac{[\text{s_1072}]}{\text{ic1072}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0332} \cdot \left(\frac{[\text{s_0332}]}{\text{ic0332}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) \right) \quad (219)$$

Table 441: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.231	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.231	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1072			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0332			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>

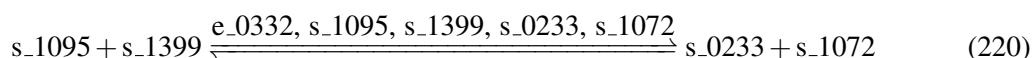
7.110 Reaction r_0370

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name aspartate transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 442: Properties of each reactant.

Id	Name	SBO
s_1095	L-Glutamate	
s_1399	Oxaloacetate	

Modifiers

Table 443: Properties of each modifier.

Id	Name	SBO
e_0332	aspC	0000460
s_1095	L-Glutamate	
s_1399	Oxaloacetate	
s_0233	2-Oxoglutarate	
s_1072	L-Aspartate	

Products

Table 444: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1072	L-Aspartate	

Kinetic Law

Derived unit contains undeclared units

$$v_{110} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1095} \cdot \left(\frac{[\text{s}_1095]}{\text{ic1095}} \right) + \text{ep1399} \cdot \left(\frac{[\text{s}_1399]}{\text{ic1399}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s}_0233]}{\text{ic0233}} \right) + \text{ep1072} \cdot \left(\frac{[\text{s}_1072]}{\text{ic1072}} \right) \right) \quad (221)$$

Table 445: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.487	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.487	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1399			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1072			-1.000	dimensionless	<input checked="" type="checkbox"/>

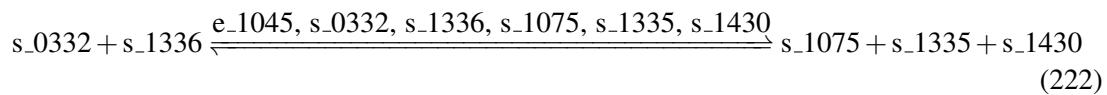
7.111 Reaction r_0371

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name aspartate-semialdehyde dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 446: Properties of each reactant.

Id	Name	SBO
s_0332	4-Phospho-L-aspartate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 447: Properties of each modifier.

Id	Name	SBO
e_1045	asd	0000460
s_0332	4-Phospho-L-aspartate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1075	L-Aspartate 4-semialdehyde	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1430	Phosphate	

Products

Table 448: Properties of each product.

Id	Name	SBO
s_1075	L-Aspartate 4-semialdehyde	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{111} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0332 \cdot \left(\frac{[\text{s_0332}]}{\text{ic}0332} \right) + \text{ep}1336 \cdot \left(\frac{[\text{s_1336}]}{\text{ic}1336} \right) + \text{ep}1075 \cdot \left(\frac{[\text{s_1075}]}{\text{ic}1075} \right) + \text{ep}1335 \cdot \left(\frac{[\text{s_1335}]}{\text{ic}1335} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic}1430} \right) \right) \quad (223)$$

Table 449: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.231	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.231	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0332			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1075			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

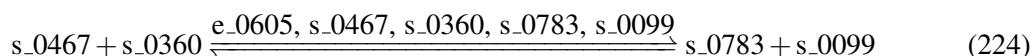
7.112 Reaction r_0374

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name ATP phosphoribosyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 450: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	

Modifiers

Table 451: Properties of each modifier.

Id	Name	SBO
e_0605	hisG	0000460
s_0467	ATP	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	
s_0783	Diphosphate	
s_0099	1-(5-Phosphoribosyl)-ATP	

Products

Table 452: Properties of each product.

Id	Name	SBO
s_0783	Diphosphate	
s_0099	1-(5-Phosphoribosyl)-ATP	

Kinetic Law

Derived unit contains undeclared units

$$v_{112} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0360} \cdot \left(\frac{[\text{s}_0360]}{\text{ic0360}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) + \text{ep0099} \cdot \left(\frac{[\text{s}_0099]}{\text{ic0099}} \right) \right) \quad (225)$$

Table 453: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0360			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0099			-1.000	dimensionless	<input checked="" type="checkbox"/>

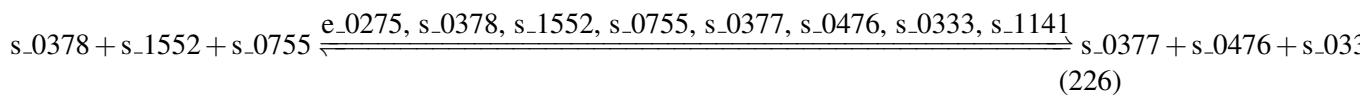
7.113 Reaction r_0383

This is a reversible reaction of three reactants forming four products influenced by eight modifiers.

Name Biotin synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 454: Properties of each reactant.

Id	Name	SBO
s_0378	[2Fe-2S] iron-sulfur cluster	
s_1552	S-Adenosyl-L-methionine	
s_0755	Dethiobiotin	

Modifiers

Table 455: Properties of each modifier.

Id	Name	SBO
e_0275	bioB	0000460
s_0378	[2Fe-2S] iron-sulfur cluster	
s_1552	S-Adenosyl-L-methionine	
s_0755	Dethiobiotin	
s_0377	[2Fe-1S] desulfurated iron-sulfur cluster	
s_0476	Biotin	
s_0333	5'-Deoxyadenosine	
s_1141	L-Methionine	

Products

Table 456: Properties of each product.

Id	Name	SBO
s_0377	[2Fe-1S] desulfurated iron-sulfur cluster	
s_0476	Biotin	
s_0333	5'-Deoxyadenosine	
s_1141	L-Methionine	

Kinetic Law

Derived unit contains undeclared units

$$v_{113} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep}0378 \cdot \left(\frac{[\text{s_0378}]}{\text{ic0378}} \right) + \text{ep}1552 \cdot \left(\frac{[\text{s_1552}]}{\text{ic1552}} \right) + \text{ep}0755 \cdot \left(\frac{[\text{s_0755}]}{\text{ic0755}} \right) + \text{ep}0377 \cdot \left(\frac{[\text{s_0377}]}{\text{ic0377}} \right) + \text{ep}0476 \cdot \left(\frac{[\text{s_0476}]}{\text{ic0476}} \right) + \text{ep}0333 \cdot \left(\frac{[\text{s_0333}]}{\text{ic0333}} \right) + \text{ep}1141 \cdot \left(\frac{[\text{s_1141}]}{\text{ic1141}} \right) \right) \quad (227)$$

Table 457: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0378			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1552			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0755			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0377			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0476			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0333			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1141			-1.000	dimensionless	<input checked="" type="checkbox"/>

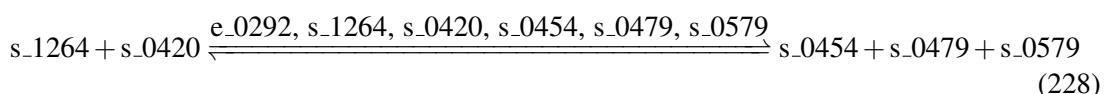
7.114 Reaction r_0384

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name bis-molybdenum cofactor synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 458: Properties of each reactant.

Id	Name	SBO
s_1264	molybdenum cofactor	
s_0420	adenylated molybdopterin	

Modifiers

Table 459: Properties of each modifier.

Id	Name	SBO
e_0292	moeA	0000460
s_1264	molybdenum cofactor	
s_0420	adenylated molybdopterin	
s_0454	AMP	
s_0479	bis-molybdenum cofactor	
s_0579	Cu2+	

Products

Table 460: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_0479	bis-molybdenum cofactor	
s_0579	Cu2+	

Kinetic Law

Derived unit contains undeclared units

$$v_{114} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1264} \cdot \left(\frac{[\text{s}_1264]}{\text{ic1264}} \right) + \text{ep0420} \cdot \left(\frac{[\text{s}_0420]}{\text{ic0420}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s}_0454]}{\text{ic0454}} \right) + \text{ep0479} \cdot \left(\frac{[\text{s}_0479]}{\text{ic0479}} \right) + \text{ep0579} \cdot \left(\frac{[\text{s}_0579]}{\text{ic0579}} \right) \right) \quad (229)$$

Table 461: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$1.68990415703956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			$1.68990415703956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1264			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0420			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0479			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0579			-1.000	dimensionless	<input checked="" type="checkbox"/>

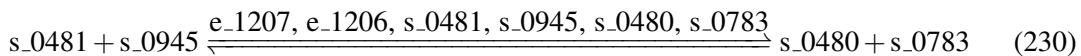
7.115 Reaction r_0385

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name bis-molybdopterin guanine dinucleotide synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 462: Properties of each reactant.

Id	Name	SBO
s_0481	bis-molybdopterin mono-guanine dinucleotide	
s_0945	GTP	

Modifiers

Table 463: Properties of each modifier.

Id	Name	SBO
e_1207	mobA	0000460
e_1206	mobB	0000460
s_0481	bis-molybdopterin mono-guanine dinucleotide	
s_0945	GTP	
s_0480	bis-molybdopterin guanine dinucleotide	
s_0783	Diphosphate	

Products

Table 464: Properties of each product.

Id	Name	SBO
s_0480	bis-molybdopterin guanine dinucleotide	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{115} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0481} \cdot \left(\frac{[\text{s_0481}]}{\text{ic0481}} \right) + \text{ep0945} \cdot \left(\frac{[\text{s_0945}]}{\text{ic0945}} \right) + \text{ep0480} \cdot \left(\frac{[\text{s_0480}]}{\text{ic0480}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (231)$$

Table 465: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$1.68990415703956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$1.68990415703956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0481			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0945			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0480			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

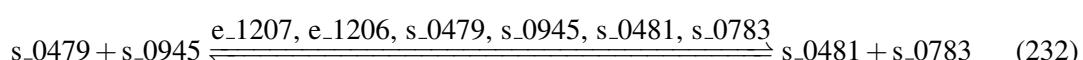
7.116 Reaction r_0386

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name bis-molybdopterin guanine dinucleotide synthase (single GDP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 466: Properties of each reactant.

Id	Name	SBO
s_0479	bis-molybdenum cofactor	
s_0945	GTP	

Modifiers

Table 467: Properties of each modifier.

Id	Name	SBO
e_1207	mobA	0000460
e_1206	mobB	0000460
s_0479	bis-molybdenum cofactor	
s_0945	GTP	
s_0481	bis-molybdopterin mono-guanine dinucleotide	
s_0783	Diphosphate	

Products

Table 468: Properties of each product.

Id	Name	SBO
s_0481	bis-molybdopterin mono-guanine dinucleotide	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{116} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0479} \cdot \left(\frac{[\text{s}_0479]}{\text{ic0479}} \right) + \text{ep0945} \cdot \left(\frac{[\text{s}_0945]}{\text{ic0945}} \right) + \text{ep0481} \cdot \left(\frac{[\text{s}_0481]}{\text{ic0481}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (233)$$

Table 469: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$1.68990415703956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$1.68990415703956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0479			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0945			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0481			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

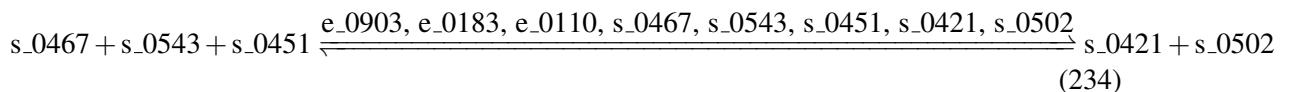
7.117 Reaction r_0388

This is a reversible reaction of three reactants forming two products influenced by eight modifiers.

Name Carbamate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 470: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0543	CO2	
s_0451	Ammonium	

Modifiers

Table 471: Properties of each modifier.

Id	Name	SBO
e_0903	yqeA	0000460
e_0183	arcC	0000460
e_0110	yahI	0000460
s_0467	ATP	
s_0543	CO2	
s_0451	Ammonium	
s_0421	ADP	
s_0502	Carbamoyl phosphate	

Products

Table 472: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0502	Carbamoyl phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{117} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep0451} \cdot \left(\frac{[\text{s_0451}]}{\text{ic0451}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0502} \cdot \left(\frac{[\text{s_0502}]}{\text{ic0502}} \right) \right) \quad (235)$$

Table 473: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.087	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.087	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0502			-1.000	dimensionless	<input checked="" type="checkbox"/>

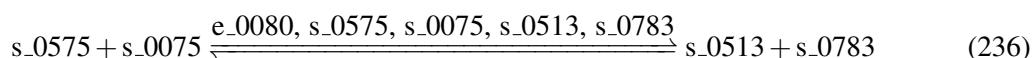
7.118 Reaction r_0418

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name CDP-diacylglycerol synthetase (n-C16:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 474: Properties of each reactant.

Id	Name	SBO
s_0575	CTP	
s_0075	1,2-dihexadecanoyl-sn-glycerol 3-phosphate	

Modifiers

Table 475: Properties of each modifier.

Id	Name	SBO
e_0080	cdsA	0000460
s_0575	CTP	
s_0075	1,2-dihexadecanoyl-sn-glycerol 3-phosphate	
s_0513	CDP-1,2-dihexadecanoylglycerol	
s_0783	Diphosphate	

Products

Table 476: Properties of each product.

Id	Name	SBO
s_0513	CDP-1,2-dihexadecanoylglycerol	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{118} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0575} \cdot \left(\frac{[\text{s}_0575]}{\text{ic0575}} \right) + \text{ep0075} \cdot \left(\frac{[\text{s}_0075]}{\text{ic0075}} \right) + \text{ep0513} \cdot \left(\frac{[\text{s}_0513]}{\text{ic0513}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (237)$$

Table 477: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0575			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0075			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0513			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

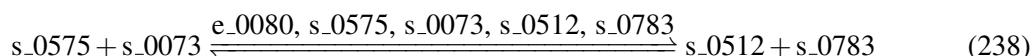
7.119 Reaction r_0419

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name CDP-diacylglycerol synthetase (n-C16:1)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 478: Properties of each reactant.

Id	Name	SBO
s_0575	CTP	
s_0073	1,2-dihexadec-9-enoyl-sn-glycerol 3-phosphate	

Modifiers

Table 479: Properties of each modifier.

Id	Name	SBO
e_0080	cdsA	0000460
s_0575	CTP	
s_0073	1,2-dihexadec-9-enoyl-sn-glycerol 3-phosphate	
s_0512	CDP-1,2-dihexadec-9-enoylglycerol	
s_0783	Diphosphate	

Products

Table 480: Properties of each product.

Id	Name	SBO
s_0512	CDP-1,2-dihexadec-9-enoylglycerol	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{119} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0575} \cdot \left(\frac{[\text{s_0575}]}{\text{ic0575}} \right) + \text{ep0073} \cdot \left(\frac{[\text{s_0073}]}{\text{ic0073}} \right) + \text{ep0512} \cdot \left(\frac{[\text{s_0512}]}{\text{ic0512}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (239)$$

Table 481: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0575			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0073			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0512			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

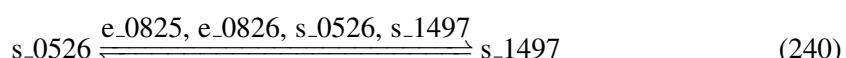
7.120 Reaction r_0423

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name chorismate mutase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 482: Properties of each reactant.

Id	Name	SBO
s_0526	chorismate	

Modifiers

Table 483: Properties of each modifier.

Id	Name	SBO
e_0825	pheA	0000460
e_0826	tyrA	0000460
s_0526	chorismate	
s_1497	Prephenate	

Product

Table 484: Properties of each product.

Id	Name	SBO
s_1497	Prephenate	

Kinetic Law

Derived unit contains undeclared units

$$v_{120} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0526 \cdot \left(\frac{[\text{s}_0526]}{\text{ic}0526} \right) + \text{ep}1497 \cdot \left(\frac{[\text{s}_1497]}{\text{ic}1497} \right) \right) \quad (241)$$

Table 485: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.045	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.045	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0526			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1497			-1.000	dimensionless	<input checked="" type="checkbox"/>

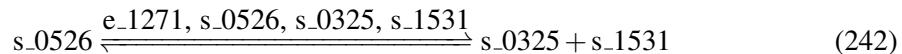
7.121 Reaction r_0424

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name Chorismate pyruvate lyase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 486: Properties of each reactant.

Id	Name	SBO
s_0526	chorismate	

Modifiers

Table 487: Properties of each modifier.

Id	Name	SBO
e_1271	ubiC	0000460
s_0526	chorismate	
s_0325	4-Hydroxybenzoate	
s_1531	Pyruvate	

Products

Table 488: Properties of each product.

Id	Name	SBO
s_0325	4-Hydroxybenzoate	
s_1531	Pyruvate	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{121} = & \text{vol}(\text{cell}) \cdot v0 \\ & \cdot \left(1 + \text{ep0526} \cdot \left(\frac{[\text{s_0526}]}{\text{ic0526}} \right) + \text{ep0325} \cdot \left(\frac{[\text{s_0325}]}{\text{ic0325}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s_1531}]}{\text{ic1531}} \right) \right) \end{aligned} \quad (243)$$

Table 489: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0526			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0325			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			-1.000	dimensionless	<input checked="" type="checkbox"/>

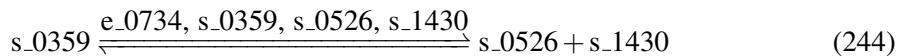
7.122 Reaction r_0425

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name chorismate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 490: Properties of each reactant.

Id	Name	SBO
s_{-0359}	5-O-(1-Carboxyvinyl)-3-phosphoshikimate	

Modifiers

Table 491: Properties of each modifier.

Id	Name	SBO
e_{-0734}	aroC	0000460
s_{-0359}	5-O-(1-Carboxyvinyl)-3-phosphoshikimate	
s_{-0526}	chorismate	
s_{-1430}	Phosphate	

Products

Table 492: Properties of each product.

Id	Name	SBO
s_0526	chorismate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{122} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0359 \cdot \left(\frac{[\text{s_0359}]}{\text{ic}0359} \right) + \text{ep}0526 \cdot \left(\frac{[\text{s_0526}]}{\text{ic}0526} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic}1430} \right) \right) \quad (245)$$

Table 493: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0359			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0526			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

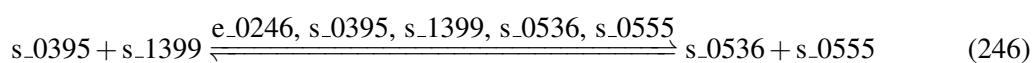
7.123 Reaction r_0428

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name citrate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 494: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	

Id	Name	SBO
s_1399	Oxaloacetate	

Modifiers

Table 495: Properties of each modifier.

Id	Name	SBO
e_0246	gltA	0000460
s_0395	Acetyl-CoA	
s_1399	Oxaloacetate	
s_0536	Citrate	
s_0555	Coenzyme A	

Products

Table 496: Properties of each product.

Id	Name	SBO
s_0536	Citrate	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{123} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s}_0395]}{\text{ic0395}} \right) + \text{ep1399} \cdot \left(\frac{[\text{s}_1399]}{\text{ic1399}} \right) + \text{ep0536} \cdot \left(\frac{[\text{s}_0536]}{\text{ic0536}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s}_0555]}{\text{ic0555}} \right) \right) \quad (247)$$

Table 497: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.149	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.149	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1399			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0536			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

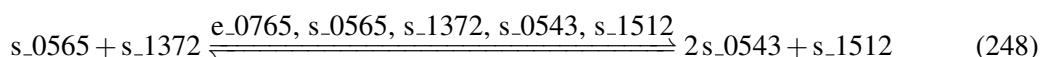
7.124 Reaction r_0436

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name coproporphyrinogen oxidase (O₂ required)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 498: Properties of each reactant.

Id	Name	SBO
s_0565	Coproporphyrinogen III	
s_1372	O ₂	

Modifiers

Table 499: Properties of each modifier.

Id	Name	SBO
e_0765	hemF	0000460
s_0565	Coproporphyrinogen III	
s_1372	O ₂	
s_0543	CO ₂	
s_1512	Protoporphyrinogen IX	

Products

Table 500: Properties of each product.

Id	Name	SBO
s_0543	CO ₂	
s_1512	Protoporphyrinogen IX	

Kinetic Law

Derived unit contains undeclared units

$$v_{124} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0565} \cdot \left(\frac{[\text{s_0565}]}{\text{ic0565}} \right) + \text{ep1372} \cdot \left(\frac{[\text{s_1372}]}{\text{ic1372}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1512} \cdot \left(\frac{[\text{s_1512}]}{\text{ic1512}} \right) \right) \quad (249)$$

Table 501: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317225085 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317225085 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0565			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1372			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep1512			-1.000	dimensionless	<input checked="" type="checkbox"/>

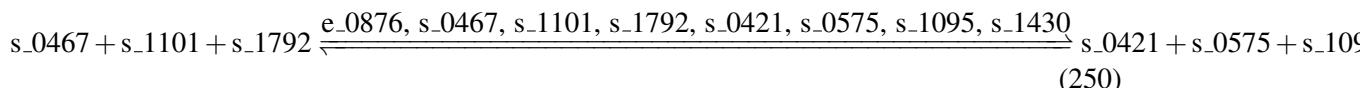
7.125 Reaction r_0440

This is a reversible reaction of three reactants forming four products influenced by eight modifiers.

Name CTP synthase (glutamine)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 502: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1101	L-Glutamine	
s_1792	UTP	

Modifiers

Table 503: Properties of each modifier.

Id	Name	SBO
e_0876	pyrG	0000460
s_0467	ATP	
s_1101	L-Glutamine	
s_1792	UTP	
s_0421	ADP	
s_0575	CTP	
s_1095	L-Glutamate	
s_1430	Phosphate	

Products

Table 504: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0575	CTP	
s_1095	L-Glutamate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{125} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1101} \cdot \left(\frac{[\text{s_1101}]}{\text{ic1101}} \right) + \text{ep1792} \cdot \left(\frac{[\text{s_1792}]}{\text{ic1792}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0575} \cdot \left(\frac{[\text{s_0575}]}{\text{ic0575}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (251)$$

Table 505: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.022	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.022	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1101			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1792			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0575			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

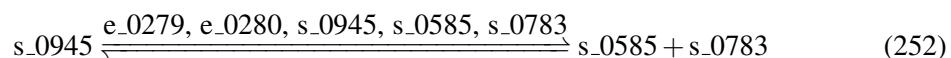
7.126 Reaction r_0445

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name cyclic pyranopterin monophosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 506: Properties of each reactant.

Id	Name	SBO
s_0945	GTP	

Modifiers

Table 507: Properties of each modifier.

Id	Name	SBO
e_0279	moaA	0000460
e_0280	moaC	0000460
s_0945	GTP	
s_0585	cyclic pyranopterin monophosphate	
s_0783	Diphosphate	

Products

Table 508: Properties of each product.

Id	Name	SBO
s_0585	cyclic pyranopterin monophosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{126} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0945} \cdot \left(\frac{[\text{s_0945}]}{\text{ic0945}} \right) + \text{ep0585} \cdot \left(\frac{[\text{s_0585}]}{\text{ic0585}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (253)$$

Table 509: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.37980831407913 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.37980831407913 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0945			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0585			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

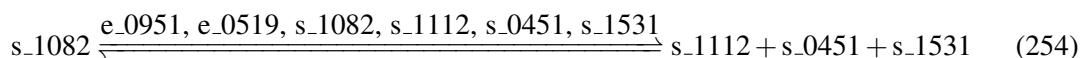
7.127 Reaction r_0450

This is a reversible reaction of one reactant forming three products influenced by six modifiers.

Name cystathionine b-lyase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 510: Properties of each reactant.

Id	Name	SBO
s_1082	L-Cystathionine	

Modifiers

Table 511: Properties of each modifier.

Id	Name	SBO
e_0951	metC	0000460
e_0519	malY	0000460
s_1082	L-Cystathione	
s_1112	L-Homocysteine	
s_0451	Ammonium	
s_1531	Pyruvate	

Products

Table 512: Properties of each product.

Id	Name	SBO
s_1112	L-Homocysteine	
s_0451	Ammonium	
s_1531	Pyruvate	

Kinetic Law

Derived unit contains undeclared units

$$v_{127} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1082} \cdot \left(\frac{[\text{s}_1082]}{\text{ic1082}} \right) + \text{ep1112} \cdot \left(\frac{[\text{s}_1112]}{\text{ic1112}} \right) + \text{ep0451} \cdot \left(\frac{[\text{s}_0451]}{\text{ic0451}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s}_1531]}{\text{ic1531}} \right) \right) \quad (255)$$

Table 513: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1082			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1112			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			-1.000	dimensionless	<input checked="" type="checkbox"/>

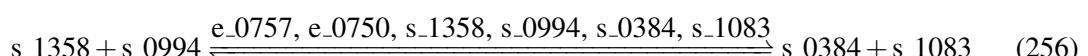
7.128 Reaction r_0452

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name cysteine synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 514: Properties of each reactant.

Id	Name	SBO
s_1358	O-Acetyl-L-serine	
s_0994	Hydrogen sulfide	

Modifiers

Table 515: Properties of each modifier.

Id	Name	SBO
e_0757	cysM	0000460
e_0750	cysK	0000460
s_1358	O-Acetyl-L-serine	
s_0994	Hydrogen sulfide	
s_0384	Acetate	
s_1083	L-Cysteine	

Products

Table 516: Properties of each product.

Id	Name	SBO
s_0384	Acetate	
s_1083	L-Cysteine	

Kinetic Law

Derived unit contains undeclared units

$$v_{128} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1358} \cdot \left(\frac{[\text{s_1358}]}{\text{ic1358}} \right) + \text{ep0994} \cdot \left(\frac{[\text{s_0994}]}{\text{ic0994}} \right) + \text{ep0384} \cdot \left(\frac{[\text{s_0384}]}{\text{ic0384}} \right) + \text{ep1083} \cdot \left(\frac{[\text{s_1083}]}{\text{ic1083}} \right) \right) \quad (257)$$

Table 517: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1358			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0994			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0384			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1083			-1.000	dimensionless	<input checked="" type="checkbox"/>

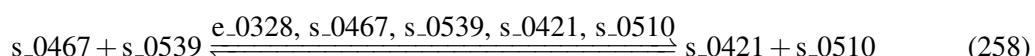
7.129 Reaction r_0457

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name cytidylate kinase (CMP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 518: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0539	CMP	

Modifiers

Table 519: Properties of each modifier.

Id	Name	SBO
e_0328	cmk	0000460
s_0467	ATP	
s_0539	CMP	
s_0421	ADP	
s_0510	CDP	

Products

Table 520: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0510	CDP	

Kinetic Law

Derived unit contains undeclared units

$$v_{129} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0539} \cdot \left(\frac{[\text{s_0539}]}{\text{ic0539}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0510} \cdot \left(\frac{[\text{s_0510}]}{\text{ic0510}} \right) \right) \quad (259)$$

Table 521: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.025	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.025	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0539			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0510			-1.000	dimensionless	<input checked="" type="checkbox"/>

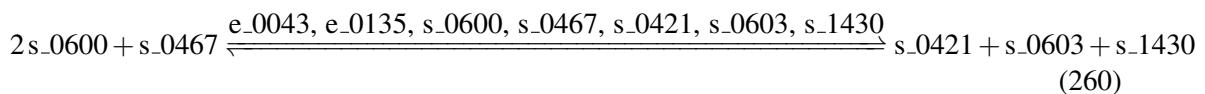
7.130 Reaction r_0463

This is a reversible reaction of two reactants forming three products influenced by seven modifiers.

Name D-alanine-D-alanine ligase (reversible)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 522: Properties of each reactant.

Id	Name	SBO
s_0600	D-Alanine	
s_0467	ATP	

Modifiers

Table 523: Properties of each modifier.

Id	Name	SBO
e_0043	ddlB	0000460
e_0135	ddlA	0000460
s_0600	D-Alanine	
s_0467	ATP	
s_0421	ADP	
s_0603	D-Alanyl-D-alanine	
s_1430	Phosphate	

Products

Table 524: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0603	D-Alanyl-D-alanine	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{130} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0600} \cdot \left(\frac{[\text{s_0600}]}{\text{ic0600}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0603} \cdot \left(\frac{[\text{s_0603}]}{\text{ic0603}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (261)$$

Table 525: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0600			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0603			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

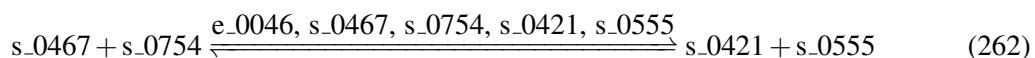
7.131 Reaction r_0488

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name dephospho-CoA kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 526: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0754	Dephospho-CoA	

Modifiers

Table 527: Properties of each modifier.

Id	Name	SBO
e_0046	coaE	0000460
s_0467	ATP	
s_0754	Dephospho-CoA	
s_0421	ADP	
s_0555	Coenzyme A	

Products

Table 528: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{131} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0754} \cdot \left(\frac{[\text{s_0754}]}{\text{ic0754}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) \right) \quad (263)$$

Table 529: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0754			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

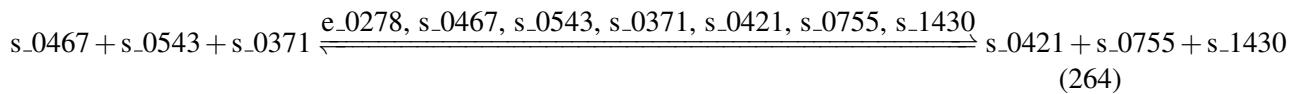
7.132 Reaction r_0489

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name dethiobiotin synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 530: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0543	CO2	
s_0371	7,8-Diaminononanoate	

Modifiers

Table 531: Properties of each modifier.

Id	Name	SBO
e_0278	bioD1	0000460
s_0467	ATP	
s_0543	CO2	
s_0371	7,8-Diaminononanoate	
s_0421	ADP	
s_0755	Dethiobiotin	
s_1430	Phosphate	

Products

Table 532: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0755	Dethiobiotin	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{132} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep0371} \cdot \left(\frac{[\text{s_0371}]}{\text{ic0371}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0755} \cdot \left(\frac{[\text{s_0755}]}{\text{ic0755}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (265)$$

Table 533: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0371			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0755			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

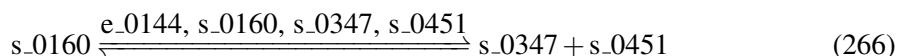
7.133 Reaction r_0498

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name diaminohydroxyphosphoribosylaminopyrimidine deaminase (25drapp)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 534: Properties of each reactant.

Id	Name	SBO
s_0160	2,5-Diamino-6-(ribosylamino)-4-(3H)-pyrimidinone 5'-phosphate	

Modifiers

Table 535: Properties of each modifier.

Id	Name	SBO
e_0144	ribD	0000460
s_0160	2,5-Diamino-6-(ribosylamino)-4-(3H)-pyrimidinone 5'-phosphate	
s_0347	5-Amino-6-(5'-phosphoribosylamino)uracil	
s_0451	Ammonium	

Products

Table 536: Properties of each product.

Id	Name	SBO
s_0347	5-Amino-6-(5'-phosphoribosylamino)uracil	
s_0451	Ammonium	

Kinetic Law

Derived unit contains undeclared units

$$v_{133} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0160} \cdot \left(\frac{[\text{s}_0160]}{\text{ic0160}} \right) + \text{ep0347} \cdot \left(\frac{[\text{s}_0347]}{\text{ic0347}} \right) + \text{ep0451} \cdot \left(\frac{[\text{s}_0451]}{\text{ic0451}} \right) \right) \quad (267)$$

Table 537: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0160			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0347			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			-1.000	dimensionless	<input checked="" type="checkbox"/>

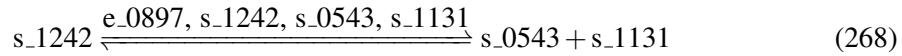
7.134 Reaction r_0499

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name diaminopimelate decarboxylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 538: Properties of each reactant.

Id	Name	SBO
s_1242	meso-2,6-Diaminoheptanedioate	

Modifiers

Table 539: Properties of each modifier.

Id	Name	SBO
e_0897	lysA	0000460
s_1242	meso-2,6-Diaminoheptanedioate	
s_0543	CO2	
s_1131	L-Lysine	

Products

Table 540: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_1131	L-Lysine	

Kinetic Law

Derived unit contains undeclared units

$$v_{134} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1242} \cdot \left(\frac{[s_{1242}]}{\text{ic1242}} \right) + \text{ep0543} \cdot \left(\frac{[s_{0543}]}{\text{ic0543}} \right) + \text{ep1131} \cdot \left(\frac{[s_{1131}]}{\text{ic1131}} \right) \right) \quad (269)$$

Table 541: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.048	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.048	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1242			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1131			-1.000	dimensionless	<input checked="" type="checkbox"/>

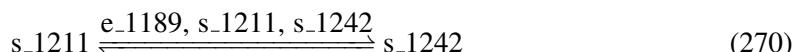
7.135 Reaction r_0500

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name diaminopimelate epimerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 542: Properties of each reactant.

Id	Name	SBO
s_1211	LL-2,6-Diaminoheptanedioate	

Modifiers

Table 543: Properties of each modifier.

Id	Name	SBO
e_1189	dapF	0000460
s_1211	LL-2,6-Diaminoheptanedioate	
s_1242	meso-2,6-Diaminoheptanedioate	

Product

Table 544: Properties of each product.

Id	Name	SBO
s_1242	meso-2,6-Diaminoheptanedioate	

Kinetic Law

Derived unit contains undeclared units

$$v_{135} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1211} \cdot \left(\frac{[\text{s}_1211]}{\text{ic1211}} \right) + \text{ep1242} \cdot \left(\frac{[\text{s}_1242]}{\text{ic1242}} \right) \right) \quad (271)$$

Table 545: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1211			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1242			-1.000	dimensionless	<input checked="" type="checkbox"/>

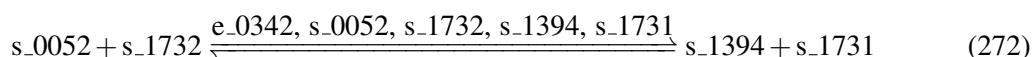
7.136 Reaction r_0501

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name dihydroorotic acid dehydrogenase (quinone8)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 546: Properties of each reactant.

Id	Name	SBO
s_0052	(S)-Dihydroorotate	
s_1732	Ubiquinone-8	

Modifiers

Table 547: Properties of each modifier.

Id	Name	SBO
e_0342	pyrD	0000460
s_0052	(S)-Dihydroorotate	
s_1732	Ubiquinone-8	
s_1394	Orotate	
s_1731	Ubiquinol-8	

Products

Table 548: Properties of each product.

Id	Name	SBO
s_1394	Orotate	
s_1731	Ubiquinol-8	

Kinetic Law

Derived unit contains undeclared units

$$v_{136} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0052 \cdot \left(\frac{[\text{s}_0052]}{\text{ic}0052} \right) + \text{ep}1732 \cdot \left(\frac{[\text{s}_1732]}{\text{ic}1732} \right) + \text{ep}1394 \cdot \left(\frac{[\text{s}_1394]}{\text{ic}1394} \right) + \text{ep}1731 \cdot \left(\frac{[\text{s}_1731]}{\text{ic}1731} \right) \right) \quad (273)$$

Table 549: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0052			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1732			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1394			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1731			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.137 Reaction r_0502

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name dihydروdipicolinate reductase (NADPH)

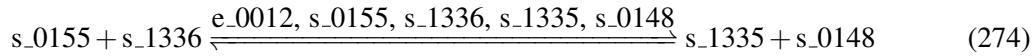
SBO:0000176 biochemical reaction**Reaction equation****Reactants**

Table 550: Properties of each reactant.

Id	Name	SBO
s_{_0155}	2,3-Dihydrodipicolinate	
s_{_1336}	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 551: Properties of each modifier.

Id	Name	SBO
e_{_0012}	dapB	0000460
s_{_0155}	2,3-Dihydrodipicolinate	
s_{_1336}	Nicotinamide adenine dinucleotide phosphate - reduced	
s_{_1335}	Nicotinamide adenine dinucleotide phosphate	
s_{_0148}	2,3,4,5-Tetrahydrodipicolinate	

Products

Table 552: Properties of each product.

Id	Name	SBO
s_{_1335}	Nicotinamide adenine dinucleotide phosphate	
s_{_0148}	2,3,4,5-Tetrahydrodipicolinate	

Kinetic Law**Derived unit** contains undeclared units

$$v_{137} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0155} \cdot \left(\frac{[s_{_0155}]}{\text{ic0155}} \right) + \text{ep1336} \cdot \left(\frac{[s_{_1336}]}{\text{ic1336}} \right) + \text{ep1335} \cdot \left(\frac{[s_{_1335}]}{\text{ic1335}} \right) + \text{ep0148} \cdot \left(\frac{[s_{_0148}]}{\text{ic0148}} \right) \right) \quad (275)$$

Table 553: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0155			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0148			-1.000	dimensionless	<input checked="" type="checkbox"/>

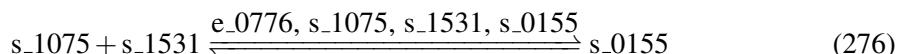
7.138 Reaction r_0503

This is a reversible reaction of two reactants forming one product influenced by four modifiers.

Name dihydروdipicolinate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 554: Properties of each reactant.

Id	Name	SBO
s_{-1075}	L-Aspartate 4-semialdehyde	
s_{-1531}	Pyruvate	

Modifiers

Table 555: Properties of each modifier.

Id	Name	SBO
e_{-0776}	dapA	0000460
s_{-1075}	L-Aspartate 4-semialdehyde	
s_{-1531}	Pyruvate	
s_{-0155}	2,3-Dihydrodipicolinate	

Product

Table 556: Properties of each product.

Id	Name	SBO
s_0155	2,3-Dihydrodipicolinate	

Kinetic Law

Derived unit contains undeclared units

$$v_{138} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1075} \cdot \left(\frac{[\text{s_1075}]}{\text{ic1075}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s_1531}]}{\text{ic1531}} \right) + \text{ep0155} \cdot \left(\frac{[\text{s_0155}]}{\text{ic0155}} \right) \right) \quad (277)$$

Table 557: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1075			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0155			-1.000	dimensionless	<input checked="" type="checkbox"/>

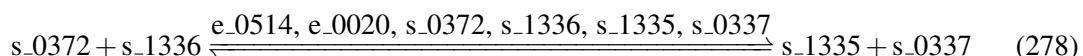
7.139 Reaction r_0504

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name dihydrofolate reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 558: Properties of each reactant.

Id	Name	SBO
s_0372	7,8-Dihydrofolate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 559: Properties of each modifier.

Id	Name	SBO
e_0514	folM	0000460
e_0020	folA	0000460
s_0372	7,8-Dihydrofolate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0337	5,6,7,8-Tetrahydrofolate	

Products

Table 560: Properties of each product.

Id	Name	SBO
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0337	5,6,7,8-Tetrahydrofolate	

Kinetic Law

Derived unit contains undeclared units

$$v_{139} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0372} \cdot \left(\frac{[\text{s}_0372]}{\text{ic0372}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s}_1336]}{\text{ic1336}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s}_1335]}{\text{ic1335}} \right) + \text{ep0337} \cdot \left(\frac{[\text{s}_0337]}{\text{ic0337}} \right) \right) \quad (279)$$

Table 561: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0372			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0337			-1.000	dimensionless	<input checked="" type="checkbox"/>

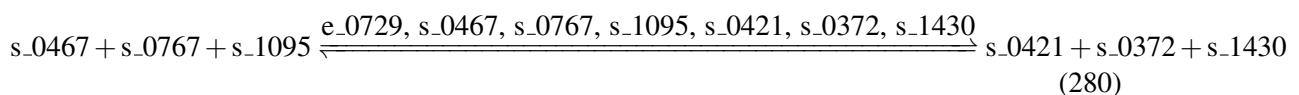
7.140 Reaction r_0505

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name dihydrofolate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 562: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0767	Dihydropteroate	
s_1095	L-Glutamate	

Modifiers

Table 563: Properties of each modifier.

Id	Name	SBO
e_0729	folC	0000460
s_0467	ATP	
s_0767	Dihydropteroate	
s_1095	L-Glutamate	
s_0421	ADP	
s_0372	7,8-Dihydrofolate	
s_1430	Phosphate	

Products

Table 564: Properties of each product.

Id	Name	SBO
s_0421	ADP	

Id	Name	SBO
s_0372	7,8-Dihydrofolate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{140} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0767} \cdot \left(\frac{[\text{s_0767}]}{\text{ic0767}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0372} \cdot \left(\frac{[\text{s_0372}]}{\text{ic0372}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (281)$$

Table 565: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0767			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0372			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

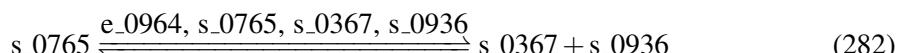
7.141 Reaction r_0507

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name dihydroneopterin aldolase reversible

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 566: Properties of each reactant.

Id	Name	SBO
s_0765	Dihydronopterin	

Modifiers

Table 567: Properties of each modifier.

Id	Name	SBO
e_0964	folB	0000460
s_0765	Dihydronopterin	
s_0367	6-hydroxymethyl dihydropterin	
s_0936	Glycolaldehyde	

Products

Table 568: Properties of each product.

Id	Name	SBO
s_0367	6-hydroxymethyl dihydropterin	
s_0936	Glycolaldehyde	

Kinetic Law

Derived unit contains undeclared units

$$v_{141} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0765} \cdot \left(\frac{[\text{s}_0765]}{\text{ic0765}} \right) + \text{ep0367} \cdot \left(\frac{[\text{s}_0367]}{\text{ic0367}} \right) + \text{ep0936} \cdot \left(\frac{[\text{s}_0936]}{\text{ic0936}} \right) \right) \quad (283)$$

Table 569: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0765			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0367			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0936			-1.000	dimensionless	<input checked="" type="checkbox"/>

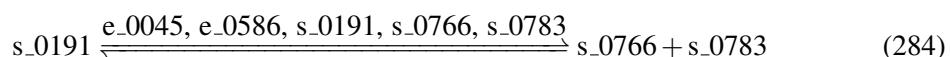
7.142 Reaction r_0510

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name Dihydronopterin triphosphate pyrophosphatase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 570: Properties of each reactant.

Id	Name	SBO
s_0191	2-Amino-4-hydroxy-6-(erythro-1,2,3-trihydroxypropyl)dihydropteridine triphosphate	

Modifiers

Table 571: Properties of each modifier.

Id	Name	SBO
e_0045	mutT	0000460
e_0586	nudB	0000460
s_0191	2-Amino-4-hydroxy-6-(erythro-1,2,3-trihydroxypropyl)dihydropteridine triphosphate	
s_0766	Dihydronopterin monophosphate	
s_0783	Diphosphate	

Products

Table 572: Properties of each product.

Id	Name	SBO
s_0766	Dihydronopterin monophosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{142} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep0191} \cdot \left(\frac{[\text{s_0191}]}{\text{ic0191}} \right) + \text{ep0766} \cdot \left(\frac{[\text{s_0766}]}{\text{ic0766}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (285)$$

Table 573: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0191			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0766			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

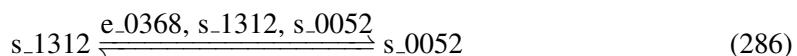
7.143 Reaction r_0511

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name dihydroorotase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 574: Properties of each reactant.

Id	Name	SBO
s_1312	N-Carbamoyl-L-aspartate	

Modifiers

Table 575: Properties of each modifier.

Id	Name	SBO
e_0368	pyrC	0000460
s_1312	N-Carbamoyl-L-aspartate	
s_0052	(S)-Dihydroorotate	

Product

Table 576: Properties of each product.

Id	Name	SBO
s_0052	(S)-Dihydroorotate	

Kinetic Law

Derived unit contains undeclared units

$$v_{143} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1312} \cdot \left(\frac{[\text{s_1312}]}{\text{ic1312}} \right) + \text{ep0052} \cdot \left(\frac{[\text{s_0052}]}{\text{ic0052}} \right) \right) \quad (287)$$

Table 577: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.046	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.046	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1312			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0052			-1.000	dimensionless	<input checked="" type="checkbox"/>

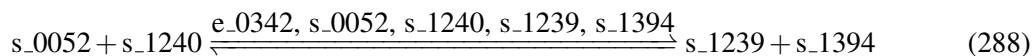
7.144 Reaction r_0512

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name dihydroorotic acid (menaquinone-8)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 578: Properties of each reactant.

Id	Name	SBO
s_0052	(S)-Dihydroorotate	
s_1240	Menaquinone 8	

Modifiers

Table 579: Properties of each modifier.

Id	Name	SBO
e_0342	pyrD	0000460
s_0052	(S)-Dihydroorotate	
s_1240	Menaquinone 8	
s_1239	Menaquinol 8	
s_1394	Orotate	

Products

Table 580: Properties of each product.

Id	Name	SBO
s_1239	Menaquinol 8	
s_1394	Orotate	

Kinetic Law

Derived unit contains undeclared units

$$v_{144} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0052 \cdot \left(\frac{[\text{s}_0052]}{\text{ic}0052} \right) + \text{ep}1240 \cdot \left(\frac{[\text{s}_1240]}{\text{ic}1240} \right) + \text{ep}1239 \cdot \left(\frac{[\text{s}_1239]}{\text{ic}1239} \right) + \text{ep}1394 \cdot \left(\frac{[\text{s}_1394]}{\text{ic}1394} \right) \right) \quad (289)$$

Table 581: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0052			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1240			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1239			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1394			-1.000	dimensionless	<input checked="" type="checkbox"/>

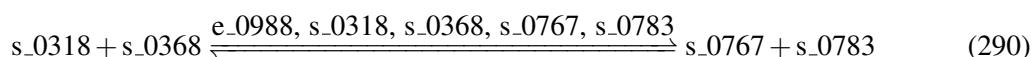
7.145 Reaction r_0515

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name dihydropteroate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 582: Properties of each reactant.

Id	Name	SBO
s_0318	4-Aminobenzoate	
s_0368	6-hydroxymethyl-dihydropteroin pyrophosphate	

Modifiers

Table 583: Properties of each modifier.

Id	Name	SBO
e_0988	folP	0000460
s_0318	4-Aminobenzoate	
s_0368	6-hydroxymethyl-dihydropteroin pyrophosphate	
s_0767	Dihydropteroate	
s_0783	Diphosphate	

Products

Table 584: Properties of each product.

Id	Name	SBO
s_0767	Dihydropteroate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{145} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0318} \cdot \left(\frac{[\text{s_0318}]}{\text{ic0318}} \right) + \text{ep0368} \cdot \left(\frac{[\text{s_0368}]}{\text{ic0368}} \right) + \text{ep0767} \cdot \left(\frac{[\text{s_0767}]}{\text{ic0767}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (291)$$

Table 585: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0318			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0368			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0767			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

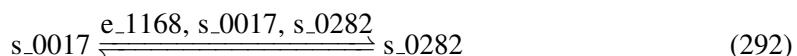
7.146 Reaction r_0517

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name dihydroxy-acid dehydratase (2,3-dihydroxy-3-methylbutanoate)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 586: Properties of each reactant.

Id	Name	SBO
s_0017	(R)-2,3-Dihydroxy-3-methylbutanoate	

Modifiers

Table 587: Properties of each modifier.

Id	Name	SBO
e_1168	ilvD	0000460

Id	Name	SBO
s_0017	(R)-2,3-Dihydroxy-3-methylbutanoate	
s_0282	3-Methyl-2-oxobutanoate	

Product

Table 588: Properties of each product.

Id	Name	SBO
s_0282	3-Methyl-2-oxobutanoate	

Kinetic Law

Derived unit contains undeclared units

$$v_{146} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0017 \cdot \left(\frac{[\text{s_0017}]}{\text{ic}0017} \right) + \text{ep}0282 \cdot \left(\frac{[\text{s_0282}]}{\text{ic}0282} \right) \right) \quad (293)$$

Table 589: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.121	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.121	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0017			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0282			-1.000	dimensionless	<input checked="" type="checkbox"/>

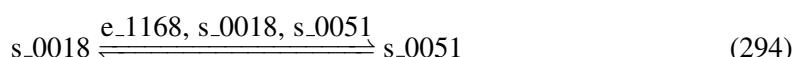
7.147 Reaction r_0518

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name Dihydroxy-acid dehydratase (2,3-dihydroxy-3-methylpentanoate)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 590: Properties of each reactant.

Id	Name	SBO
s_0018	(R)-2,3-Dihydroxy-3-methylpentanoate	

Modifiers

Table 591: Properties of each modifier.

Id	Name	SBO
e_1168	ilvD	0000460
s_0018	(R)-2,3-Dihydroxy-3-methylpentanoate	
s_0051	(S)-3-Methyl-2-oxopentanoate	

Product

Table 592: Properties of each product.

Id	Name	SBO
s_0051	(S)-3-Methyl-2-oxopentanoate	

Kinetic Law

Derived unit contains undeclared units

$$v_{147} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0018} \cdot \left(\frac{[\text{s}_0018]}{\text{ic0018}} \right) + \text{ep0051} \cdot \left(\frac{[\text{s}_0051]}{\text{ic0051}} \right) \right) \quad (295)$$

Table 593: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0018			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0051			-1.000	dimensionless	<input checked="" type="checkbox"/>

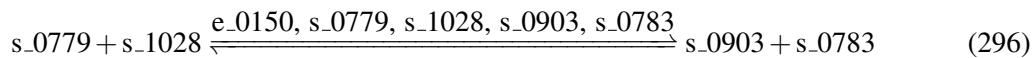
7.148 Reaction r_0522

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name dimethylallyltranstransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 594: Properties of each reactant.

Id	Name	SBO
s_0779	Dimethylallyl diphosphate	
s_1028	Isopentenyl diphosphate	

Modifiers

Table 595: Properties of each modifier.

Id	Name	SBO
e_0150	ispA	0000460
s_0779	Dimethylallyl diphosphate	
s_1028	Isopentenyl diphosphate	
s_0903	Geranyl diphosphate	
s_0783	Diphosphate	

Products

Table 596: Properties of each product.

Id	Name	SBO
s_0903	Geranyl diphosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{148} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0779} \cdot \left(\frac{[\text{s_0779}]}{\text{ic0779}} \right) + \text{ep1028} \cdot \left(\frac{[\text{s_1028}]}{\text{ic1028}} \right) + \text{ep0903} \cdot \left(\frac{[\text{s_0903}]}{\text{ic0903}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (297)$$

Table 597: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.85076521030325 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.85076521030325 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0779			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1028			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0903			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

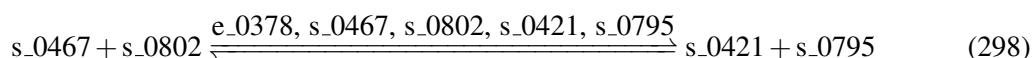
7.149 Reaction r_0532

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name dTMP kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 598: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0802	dTMP	

Modifiers

Table 599: Properties of each modifier.

Id	Name	SBO
e_0378	tmk	0000460
s_0467	ATP	
s_0802	dTMP	
s_0421	ADP	
s_0795	dTDP	

Products

Table 600: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0795	dTDP	

Kinetic Law

Derived unit contains undeclared units

$$v_{149} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0802} \cdot \left(\frac{[\text{s}_0802]}{\text{ic0802}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep0795} \cdot \left(\frac{[\text{s}_0795]}{\text{ic0795}} \right) \right) \quad (299)$$

Table 601: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0802			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0795			-1.000	dimensionless	<input checked="" type="checkbox"/>

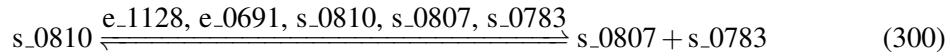
7.150 Reaction r_0533

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name dUTP diphosphatase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 602: Properties of each reactant.

Id	Name	SBO
s_0810	dUTP	

Modifiers

Table 603: Properties of each modifier.

Id	Name	SBO
e_1128	dut	0000460
e_0691	nudI	0000460
s_0810	dUTP	
s_0807	dUMP	
s_0783	Diphosphate	

Products

Table 604: Properties of each product.

Id	Name	SBO
s_0807	dUMP	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{150} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0810} \cdot \left(\frac{[s_{0810}]}{\text{ic0810}} \right) + \text{ep0807} \cdot \left(\frac{[s_{0807}]}{\text{ic0807}} \right) + \text{ep0783} \cdot \left(\frac{[s_{0783}]}{\text{ic0783}} \right) \right) \quad (301)$$

Table 605: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0810			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0807			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

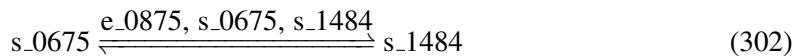
7.151 Reaction r_0538

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name enolase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 606: Properties of each reactant.

Id	Name	SBO
s_{-0675}	D-Glycerate 2-phosphate	

Modifiers

Table 607: Properties of each modifier.

Id	Name	SBO
e_{-0875}	eno	0000460
s_{-0675}	D-Glycerate 2-phosphate	
s_{-1484}	Phosphoenolpyruvate	

Product

Table 608: Properties of each product.

Id	Name	SBO
s_1484	Phosphoenolpyruvate	

Kinetic Law

Derived unit contains undeclared units

$$v_{151} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0675} \cdot \left(\frac{[\text{s_0675}]}{\text{ic0675}} \right) + \text{ep1484} \cdot \left(\frac{[\text{s_1484}]}{\text{ic1484}} \right) \right) \quad (303)$$

Table 609: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.641	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.641	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0675			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1484			-1.000	dimensionless	<input checked="" type="checkbox"/>

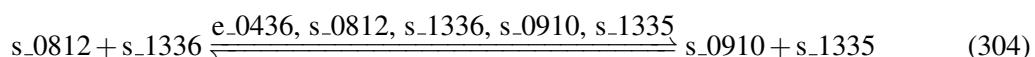
7.152 Reaction r_0563

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Enoylglutaryl-[ACP] methyl ester reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 610: Properties of each reactant.

Id	Name	SBO
s_0812	Enoylglutaryl-[acyl-carrier protein] methyl ester	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 611: Properties of each modifier.

Id	Name	SBO
e_0436	fabI	0000460
s_0812	Enoylglutaryl-[acyl-carrier protein] methyl ester	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0910	Glutaryl-[acyl-carrier protein] methyl ester	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 612: Properties of each product.

Id	Name	SBO
s_0910	Glutaryl-[acyl-carrier protein] methyl ester	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{152} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0812} \cdot \left(\frac{[\text{s}_0812]}{\text{ic0812}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s}_1336]}{\text{ic1336}} \right) + \text{ep0910} \cdot \left(\frac{[\text{s}_0910]}{\text{ic0910}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s}_1335]}{\text{ic1335}} \right) \right) \quad (305)$$

Table 613: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0812			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0910			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.153 Reaction r_0564

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Enoylpimeloyl-[ACP] methyl ester reductase

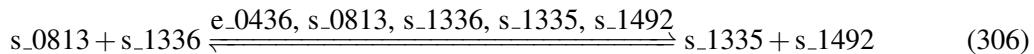
SBO:0000176 biochemical reaction**Reaction equation****Reactants**

Table 614: Properties of each reactant.

Id	Name	SBO
s_{_0813}	Enoylpimeloyl-[acyl-carrier protein] methyl ester	
s_{_1336}	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 615: Properties of each modifier.

Id	Name	SBO
e_{_0436}	fabI	0000460
s_{_0813}	Enoylpimeloyl-[acyl-carrier protein] methyl ester	
s_{_1336}	Nicotinamide adenine dinucleotide phosphate - reduced	
s_{_1335}	Nicotinamide adenine dinucleotide phosphate	
s_{_1492}	Pimeloyl-[acyl-carrier protein] methyl ester	

Products

Table 616: Properties of each product.

Id	Name	SBO
s_{_1335}	Nicotinamide adenine dinucleotide phosphate	
s_{_1492}	Pimeloyl-[acyl-carrier protein] methyl ester	

Kinetic Law**Derived unit** contains undeclared units

$$v_{153} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0813} \cdot \left(\frac{[s_{_0813}]}{\text{ic0813}} \right) + \text{ep1336} \cdot \left(\frac{[s_{_1336}]}{\text{ic1336}} \right) + \text{ep1335} \cdot \left(\frac{[s_{_1335}]}{\text{ic1335}} \right) + \text{ep1492} \cdot \left(\frac{[s_{_1492}]}{\text{ic1492}} \right) \right) \quad (307)$$

Table 617: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0813			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1492			-1.000	dimensionless	<input checked="" type="checkbox"/>

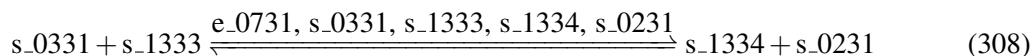
7.154 Reaction r_0573

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Erythronate 4-phosphate (4per) dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 618: Properties of each reactant.

Id	Name	SBO
s_0331	4-Phospho-D-erythronate	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 619: Properties of each modifier.

Id	Name	SBO
e_0731	pdxB	0000460
s_0331	4-Phospho-D-erythronate	
s_1333	Nicotinamide adenine dinucleotide	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0231	2-Oxo-3-hydroxy-4-phosphobutanoate	

Products

Table 620: Properties of each product.

Id	Name	SBO
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0231	2-Oxo-3-hydroxy-4-phosphobutanoate	

Kinetic Law

Derived unit contains undeclared units

$$v_{154} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0331} \cdot \left(\frac{[\text{s_0331}]}{\text{ic0331}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep0231} \cdot \left(\frac{[\text{s_0231}]}{\text{ic0231}} \right) \right) \quad (309)$$

Table 621: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317222495 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317222495 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0331			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0231			-1.000	dimensionless	<input checked="" type="checkbox"/>

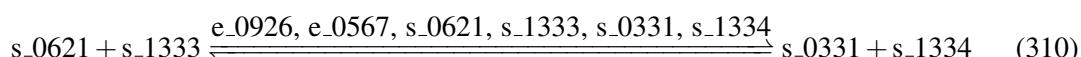
7.155 Reaction r_0574

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name Erythrose 4-phosphate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 622: Properties of each reactant.

Id	Name	SBO
s_0621	D-Erythrose 4-phosphate	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 623: Properties of each modifier.

Id	Name	SBO
e_0926	epd	0000460
e_0567	gapA	0000460
s_0621	D-Erythrose 4-phosphate	
s_1333	Nicotinamide adenine dinucleotide	
s_0331	4-Phospho-D-erythronate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Products

Table 624: Properties of each product.

Id	Name	SBO
s_0331	4-Phospho-D-erythronate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{155} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0621} \cdot \left(\frac{[\text{s}_0621]}{\text{ic0621}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) + \text{ep0331} \cdot \left(\frac{[\text{s}_0331]}{\text{ic0331}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) \right) \quad (311)$$

Table 625: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317222495 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317222495 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0621			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0331			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

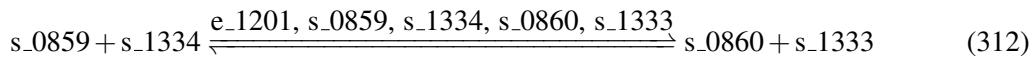
7.156 Reaction r_0576

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name FAD reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 626: Properties of each reactant.

Id	Name	SBO
s_{_0859}	Flavin adenine dinucleotide oxidized	
s_{_1334}	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 627: Properties of each modifier.

Id	Name	SBO
e_{_1201}	fre	0000460
s_{_0859}	Flavin adenine dinucleotide oxidized	
s_{_1334}	Nicotinamide adenine dinucleotide - reduced	
s_{_0860}	Flavin adenine dinucleotide reduced	
s_{_1333}	Nicotinamide adenine dinucleotide	

Products

Table 628: Properties of each product.

Id	Name	SBO
s_0860	Flavin adenine dinucleotide reduced	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{156} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0859} \cdot \left(\frac{[\text{s_0859}]}{\text{ic0859}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep0860} \cdot \left(\frac{[\text{s_0860}]}{\text{ic0860}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) \right) \quad (313)$$

Table 629: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.303	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.303	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0859			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0860			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

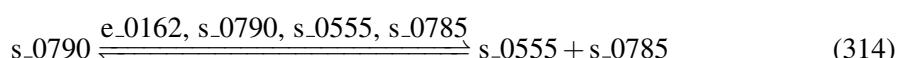
7.157 Reaction r_0579

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name fatty-acid-CoA thioesterase (dodecanoate)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 630: Properties of each reactant.

Id	Name	SBO
s_0790	Dodecanoyl-CoA (n-C12:0CoA)	

Modifiers

Table 631: Properties of each modifier.

Id	Name	SBO
e_0162	tesB	0000460
s_0790	Dodecanoyl-CoA (n-C12:0CoA)	
s_0555	Coenzyme A	
s_0785	Dodecanoate (n-C12:0)	

Products

Table 632: Properties of each product.

Id	Name	SBO
s_0555	Coenzyme A	
s_0785	Dodecanoate (n-C12:0)	

Kinetic Law

Derived unit contains undeclared units

$$v_{157} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0790} \cdot \left(\frac{[\text{s}_0790]}{\text{ic0790}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s}_0555]}{\text{ic0555}} \right) + \text{ep0785} \cdot \left(\frac{[\text{s}_0785]}{\text{ic0785}} \right) \right) \quad (315)$$

Table 633: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0790			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0785			-1.000	dimensionless	<input checked="" type="checkbox"/>

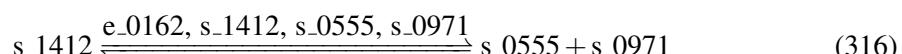
7.158 Reaction r_0580

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name fatty-acid-CoA thioesterase (hexadecanoate)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 634: Properties of each reactant.

Id	Name	SBO
s_1412	Palmitoyl-CoA (n-C16:0CoA)	

Modifiers

Table 635: Properties of each modifier.

Id	Name	SBO
e_0162	tesB	0000460
s_1412	Palmitoyl-CoA (n-C16:0CoA)	
s_0555	Coenzyme A	
s_0971	Hexadecanoate (n-C16:0)	

Products

Table 636: Properties of each product.

Id	Name	SBO
s_0555	Coenzyme A	
s_0971	Hexadecanoate (n-C16:0)	

Kinetic Law

Derived unit contains undeclared units

$$v_{158} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep1412} \cdot \left(\frac{[\text{s_1412}]}{\text{ic1412}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) + \text{ep0971} \cdot \left(\frac{[\text{s_0971}]}{\text{ic0971}} \right) \right) \quad (317)$$

Table 637: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.018	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.018	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1412			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0971			-1.000	dimensionless	<input checked="" type="checkbox"/>

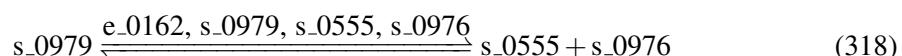
7.159 Reaction r_0581

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name fatty-acid-CoA thioesterase (hexadecenoate)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 638: Properties of each reactant.

Id	Name	SBO
s_0979	Hexadecenoyl-CoA (n-C16:1CoA)	

Modifiers

Table 639: Properties of each modifier.

Id	Name	SBO
e_0162	tesB	0000460
s_0979	Hexadecenoyl-CoA (n-C16:1CoA)	
s_0555	Coenzyme A	

Id	Name	SBO
s_0976	Hexadecenoate (n-C16:1)	

Products

Table 640: Properties of each product.

Id	Name	SBO
s_0555	Coenzyme A	
s_0976	Hexadecenoate (n-C16:1)	

Kinetic Law

Derived unit contains undeclared units

$$v_{159} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0979} \cdot \left(\frac{[\text{s_0979}]}{\text{ic0979}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) + \text{ep0976} \cdot \left(\frac{[\text{s_0976}]}{\text{ic0976}} \right) \right) \quad (319)$$

Table 641: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0979			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0976			-1.000	dimensionless	<input checked="" type="checkbox"/>

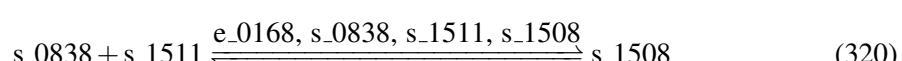
7.160 Reaction r_0602

This is a reversible reaction of two reactants forming one product influenced by four modifiers.

Name Ferrochelatase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 642: Properties of each reactant.

Id	Name	SBO
s_0838	Fe2+	
s_1511	Protoporphyrin	

Modifiers

Table 643: Properties of each modifier.

Id	Name	SBO
e_0168	hemH	0000460
s_0838	Fe2+	
s_1511	Protoporphyrin	
s_1508	Protoheme	

Product

Table 644: Properties of each product.

Id	Name	SBO
s_1508	Protoheme	

Kinetic Law

Derived unit contains undeclared units

$$v_{160} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0838 \cdot \left(\frac{[\text{s_0838}]}{\text{ic0838}} \right) + \text{ep}1511 \cdot \left(\frac{[\text{s_1511}]}{\text{ic1511}} \right) + \text{ep}1508 \cdot \left(\frac{[\text{s_1508}]}{\text{ic1508}} \right) \right) \quad (321)$$

Table 645: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317225085 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317225085 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0838			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1511			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1508			-1.000	dimensionless	<input checked="" type="checkbox"/>

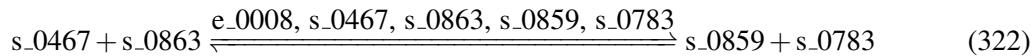
7.161 Reaction r_0611

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name FMN adenylyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 646: Properties of each reactant.

Id	Name	SBO
s_{_0467}	ATP	
s_{_0863}	FMN	

Modifiers

Table 647: Properties of each modifier.

Id	Name	SBO
e_{_0008}	ribF	0000460
s_{_0467}	ATP	
s_{_0863}	FMN	
s_{_0859}	Flavin adenine dinucleotide oxidized	
s_{_0783}	Diphosphate	

Products

Table 648: Properties of each product.

Id	Name	SBO
s_{_0859}	Flavin adenine dinucleotide oxidized	
s_{_0783}	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{161} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0863} \cdot \left(\frac{[\text{s_0863}]}{\text{ic0863}} \right) + \text{ep0859} \cdot \left(\frac{[\text{s_0859}]}{\text{ic0859}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (323)$$

Table 649: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229329 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229329 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0863			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

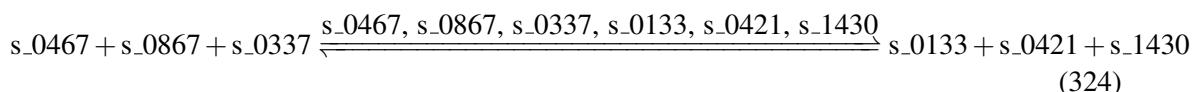
7.162 Reaction r_0622

This is a reversible reaction of three reactants forming three products influenced by six modifiers.

Name formate-tetrahydrofolate ligase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 650: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0867	Formate	
s_0337	5,6,7,8-Tetrahydrofolate	

Modifiers

Table 651: Properties of each modifier.

Id	Name	SBO
s_0467	ATP	
s_0867	Formate	
s_0337	5,6,7,8-Tetrahydrofolate	
s_0133	10-Formyltetrahydrofolate	
s_0421	ADP	
s_1430	Phosphate	

Products

Table 652: Properties of each product.

Id	Name	SBO
s_0133	10-Formyltetrahydrofolate	
s_0421	ADP	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{162} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0867} \cdot \left(\frac{[\text{s_0867}]}{\text{ic0867}} \right) + \text{ep0337} \cdot \left(\frac{[\text{s_0337}]}{\text{ic0337}} \right) + \text{ep0133} \cdot \left(\frac{[\text{s_0133}]}{\text{ic0133}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (325)$$

Table 653: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.036	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.036	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0867			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0337			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0133			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

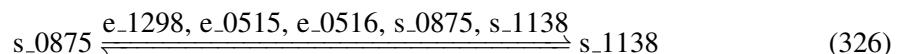
7.163 Reaction r_0632

This is a reversible reaction of one reactant forming one product influenced by five modifiers.

Name fumarase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 654: Properties of each reactant.

Id	Name	SBO
s_0875	Fumarate	

Modifiers

Table 655: Properties of each modifier.

Id	Name	SBO
e_1298	fumB	0000460
e_0515	fumC	0000460
e_0516	fumA	0000460
s_0875	Fumarate	
s_1138	L-Malate	

Product

Table 656: Properties of each product.

Id	Name	SBO
s_1138	L-Malate	

Kinetic Law

Derived unit contains undeclared units

$$v_{163} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0875 \cdot \left(\frac{[s_{0875}]}{\text{ic}0875} \right) + \text{ep}1138 \cdot \left(\frac{[s_{1138}]}{\text{ic}1138} \right) \right) \quad (327)$$

Table 657: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.143	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.143	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0875			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1138			-1.000	dimensionless	<input checked="" type="checkbox"/>

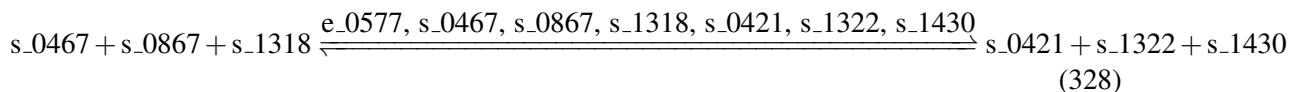
7.164 Reaction r_0648

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name GAR transformylase-T

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 658: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0867	Formate	
s_1318	N1-(5-Phospho-D-ribosyl)glycinamide	

Modifiers

Table 659: Properties of each modifier.

Id	Name	SBO
e_0577	purT	0000460
s_0467	ATP	
s_0867	Formate	
s_1318	N1-(5-Phospho-D-ribosyl)glycinamide	
s_0421	ADP	
s_1322	N2-Formyl-N1-(5-phospho-D-ribosyl)glycinamide	

Id	Name	SBO
s_1430	Phosphate	

Products

Table 660: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1322	N2-Formyl-N1-(5-phospho-D-ribosyl)glycinamide	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{164} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0867} \cdot \left(\frac{[\text{s_0867}]}{\text{ic0867}} \right) + \text{ep1318} \cdot \left(\frac{[\text{s_1318}]}{\text{ic1318}} \right) \right. \\ \left. + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1322} \cdot \left(\frac{[\text{s_1322}]}{\text{ic1322}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (329)$$

Table 661: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0867			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1318			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1322			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

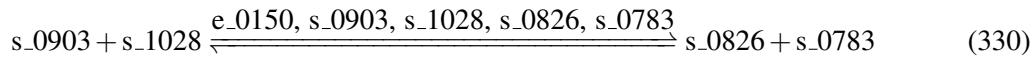
7.165 Reaction r_0655

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name geranyltranstransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 662: Properties of each reactant.

Id	Name	SBO
s_0903	Geranyl diphosphate	
s_1028	Isopentenyl diphosphate	

Modifiers

Table 663: Properties of each modifier.

Id	Name	SBO
e_0150	ispA	0000460
s_0903	Geranyl diphosphate	
s_1028	Isopentenyl diphosphate	
s_0826	Farnesyl diphosphate	
s_0783	Diphosphate	

Products

Table 664: Properties of each product.

Id	Name	SBO
s_0826	Farnesyl diphosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{165} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0903 \cdot \left(\frac{[s_0903]}{\text{ic}0903} \right) + \text{ep}1028 \cdot \left(\frac{[s_1028]}{\text{ic}1028} \right) + \text{ep}0826 \cdot \left(\frac{[s_0826]}{\text{ic}0826} \right) + \text{ep}0783 \cdot \left(\frac{[s_0783]}{\text{ic}0783} \right) \right) \quad (331)$$

Table 665: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.85076521030325 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.85076521030325 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0903			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1028			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0826			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

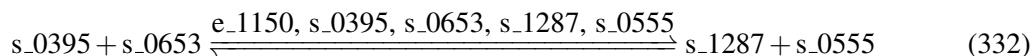
7.166 Reaction r_0658

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name glucosamine-1-phosphate N-acetyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 666: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0653	D-Glucosamine 1-phosphate	

Modifiers

Table 667: Properties of each modifier.

Id	Name	SBO
e_1150	glmU	0000460
s_0395	Acetyl-CoA	
s_0653	D-Glucosamine 1-phosphate	
s_1287	N-Acetyl-D-glucosamine 1-phosphate	
s_0555	Coenzyme A	

Products

Table 668: Properties of each product.

Id	Name	SBO
s_1287	N-Acetyl-D-glucosamine 1-phosphate	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{166} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep0653} \cdot \left(\frac{[\text{s_0653}]}{\text{ic0653}} \right) + \text{ep1287} \cdot \left(\frac{[\text{s_1287}]}{\text{ic1287}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) \right) \quad (333)$$

Table 669: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0653			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1287			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

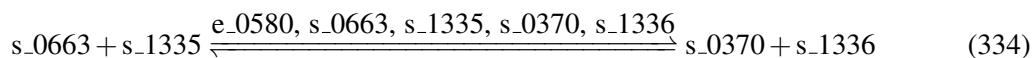
7.167 Reaction r_0660

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name glucose 6-phosphate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 670: Properties of each reactant.

Id	Name	SBO
s_0663	D-Glucose 6-phosphate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Modifiers

Table 671: Properties of each modifier.

Id	Name	SBO
e_0580	zwf	0000460
s_0663	D-Glucose 6-phosphate	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0370	6-phospho-D-glucono-1,5-lactone	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Products

Table 672: Properties of each product.

Id	Name	SBO
s_0370	6-phospho-D-glucono-1,5-lactone	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{167} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0663} \cdot \left(\frac{[\text{s}_0663]}{\text{ic0663}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s}_1335]}{\text{ic1335}} \right) + \text{ep0370} \cdot \left(\frac{[\text{s}_0370]}{\text{ic0370}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s}_1336]}{\text{ic1336}} \right) \right) \quad (335)$$

Table 673: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.880	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.880	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0663			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1335			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0370			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.168 Reaction r_0664

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name glucose-6-phosphate isomerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 674: Properties of each reactant.

Id	Name	SBO
s_0663	D-Glucose 6-phosphate	

Modifiers

Table 675: Properties of each modifier.

Id	Name	SBO
e_1264	pgi	0000460
s_0663	D-Glucose 6-phosphate	
s_0627	D-Fructose 6-phosphate	

Product

Table 676: Properties of each product.

Id	Name	SBO
s_0627	D-Fructose 6-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{168} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0663} \cdot \left(\frac{[\text{s_0663}]}{\text{ic0663}} \right) + \text{ep0627} \cdot \left(\frac{[\text{s_0627}]}{\text{ic0627}} \right) \right) \quad (337)$$

Table 677: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.055	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.055	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0663			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0627			-1.000	dimensionless	<input checked="" type="checkbox"/>

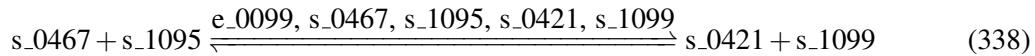
7.169 Reaction r_0673

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name glutamate 5-kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 678: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1095	L-Glutamate	

Modifiers

Table 679: Properties of each modifier.

Id	Name	SBO
e_0099	proB	0000460

Id	Name	SBO
s_0467	ATP	
s_1095	L-Glutamate	
s_0421	ADP	
s_1099	L-Glutamate 5-phosphate	

Products

Table 680: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1099	L-Glutamate 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{169} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep}1099 \cdot \left(\frac{[\text{s_1099}]}{\text{ic1099}} \right) \right) \quad (339)$$

Table 681: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.031	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.031	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1099			-1.000	dimensionless	<input checked="" type="checkbox"/>

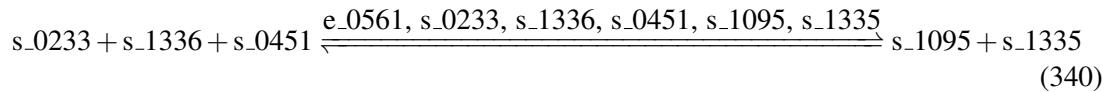
7.170 Reaction r_0675

This is a reversible reaction of three reactants forming two products influenced by six modifiers.

Name glutamate dehydrogenase (NADP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 682: Properties of each reactant.

Id	Name	SBO
s_{_0233}	2-Oxoglutarate	
s_{_1336}	Nicotinamide adenine dinucleotide phosphate - reduced	
s_{_0451}	Ammonium	

Modifiers

Table 683: Properties of each modifier.

Id	Name	SBO
e_{_0561}	gdhA	0000460
s_{_0233}	2-Oxoglutarate	
s_{_1336}	Nicotinamide adenine dinucleotide phosphate - reduced	
s_{_0451}	Ammonium	
s_{_1095}	L-Glutamate	
s_{_1335}	Nicotinamide adenine dinucleotide phosphate	

Products

Table 684: Properties of each product.

Id	Name	SBO
s_{_1095}	L-Glutamate	
s_{_1335}	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{170} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0233} \cdot \left(\frac{[\text{s_0233}]}{\text{ic0233}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep0451} \cdot \left(\frac{[\text{s_0451}]}{\text{ic0451}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) \right) \quad (341)$$

Table 685: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			1.175	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			1.175	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0233			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

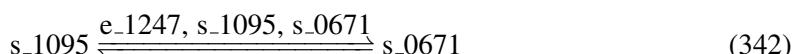
7.171 Reaction r_0676

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name glutamate racemase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 686: Properties of each reactant.

Id	Name	SBO
s_1095	L-Glutamate	

Modifiers

Table 687: Properties of each modifier.

Id	Name	SBO
e_1247	murI	0000460
s_1095	L-Glutamate	
s_0671	D-Glutamate	

Product

Table 688: Properties of each product.

Id	Name	SBO
s_0671	D-Glutamate	

Kinetic Law

Derived unit contains undeclared units

$$v_{171} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1095} \cdot \left(\frac{[\text{s}_1095]}{\text{ic1095}} \right) + \text{ep0671} \cdot \left(\frac{[\text{s}_0671]}{\text{ic0671}} \right) \right) \quad (343)$$

Table 689: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0671			-1.000	dimensionless	<input checked="" type="checkbox"/>

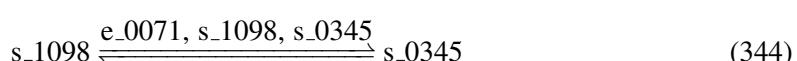
7.172 Reaction r_0678

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name glutamate-1-semialdehyde aminotransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 690: Properties of each reactant.

Id	Name	SBO
s_1098	L-Glutamate 1-semialdehyde	

Modifiers

Table 691: Properties of each modifier.

Id	Name	SBO
e_0071	hemL	0000460
s_1098	L-Glutamate 1-semialdehyde	
s_0345	5-Amino-4-oxopentanoate	

Product

Table 692: Properties of each product.

Id	Name	SBO
s_0345	5-Amino-4-oxopentanoate	

Kinetic Law

Derived unit contains undeclared units

$$v_{172} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1098} \cdot \left(\frac{[\text{s}_1098]}{\text{ic1098}} \right) + \text{ep0345} \cdot \left(\frac{[\text{s}_0345]}{\text{ic0345}} \right) \right) \quad (345)$$

Table 693: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.94227707563336 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.94227707563336 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1098			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0345			-1.000	dimensionless	<input checked="" type="checkbox"/>

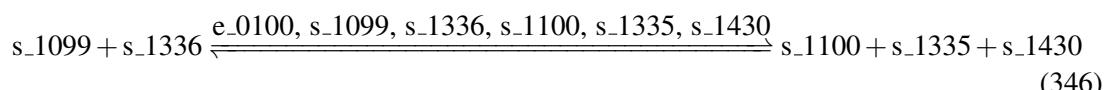
7.173 Reaction r_0679

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name glutamate-5-semialdehyde dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 694: Properties of each reactant.

Id	Name	SBO
s_1099	L-Glutamate 5-phosphate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 695: Properties of each modifier.

Id	Name	SBO
e_0100	proA	0000460
s_1099	L-Glutamate 5-phosphate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1100	L-Glutamate 5-semialdehyde	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1430	Phosphate	

Products

Table 696: Properties of each product.

Id	Name	SBO
s_1100	L-Glutamate 5-semialdehyde	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{173} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1099} \cdot \left(\frac{[\text{s_1099}]}{\text{ic1099}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep1100} \cdot \left(\frac{[\text{s_1100}]}{\text{ic1100}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (347)$$

Table 697: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.031	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.031	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1099			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1100			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

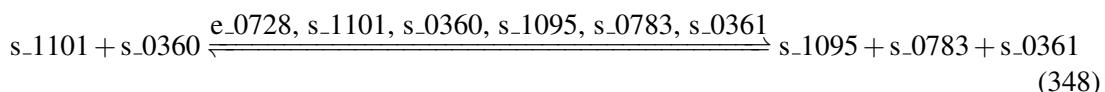
7.174 Reaction r_0682

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name glutamine phosphoribosylphosphate amidotransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 698: Properties of each reactant.

Id	Name	SBO
s_1101	L-Glutamine	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	

Modifiers

Table 699: Properties of each modifier.

Id	Name	SBO
e_0728	purF	0000460
s_1101	L-Glutamine	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	
s_1095	L-Glutamate	
s_0783	Diphosphate	
s_0361	5-Phospho-beta-D-ribosylamine	

Products

Table 700: Properties of each product.

Id	Name	SBO
s_1095	L-Glutamate	
s_0783	Diphosphate	
s_0361	5-Phospho-beta-D-ribosylamine	

Kinetic Law

Derived unit contains undeclared units

$$v_{174} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1101} \cdot \left(\frac{[s_{1101}]}{\text{ic1101}} \right) + \text{ep0360} \cdot \left(\frac{[s_{0360}]}{\text{ic0360}} \right) + \text{ep1095} \cdot \left(\frac{[s_{1095}]}{\text{ic1095}} \right) + \text{ep0783} \cdot \left(\frac{[s_{0783}]}{\text{ic0783}} \right) + \text{ep0361} \cdot \left(\frac{[s_{0361}]}{\text{ic0361}} \right) \right) \quad (349)$$

Table 701: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1101			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0360			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0361			-1.000	dimensionless	<input checked="" type="checkbox"/>

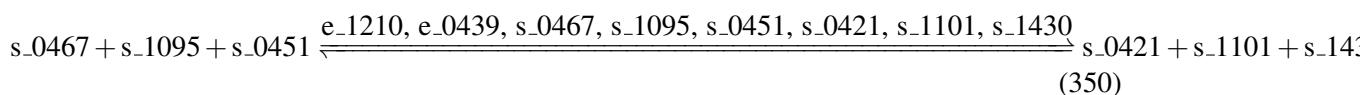
7.175 Reaction r_0683

This is a reversible reaction of three reactants forming three products influenced by eight modifiers.

Name glutamine synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 702: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1095	L-Glutamate	
s_0451	Ammonium	

Modifiers

Table 703: Properties of each modifier.

Id	Name	SBO
e_1210	glnA	0000460
e_0439	puuA	0000460
s_0467	ATP	
s_1095	L-Glutamate	
s_0451	Ammonium	
s_0421	ADP	
s_1101	L-Glutamine	
s_1430	Phosphate	

Products

Table 704: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1101	L-Glutamine	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{175} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep}0451 \cdot \left(\frac{[\text{s_0451}]}{\text{ic0451}} \right) \right. \\ \left. + \text{ep}0421 \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep}1101 \cdot \left(\frac{[\text{s_1101}]}{\text{ic1101}} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (351)$$

Table 705: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.249	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.249	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1101			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

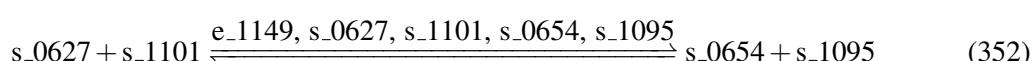
7.176 Reaction r_0684

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name glutamine-fructose-6-phosphate transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 706: Properties of each reactant.

Id	Name	SBO
s_0627	D-Fructose 6-phosphate	
s_1101	L-Glutamine	

Modifiers

Table 707: Properties of each modifier.

Id	Name	SBO
e_1149	glmS	0000460
s_0627	D-Fructose 6-phosphate	
s_1101	L-Glutamine	
s_0654	D-Glucosamine 6-phosphate	
s_1095	L-Glutamate	

Products

Table 708: Properties of each product.

Id	Name	SBO
s_0654	D-Glucosamine 6-phosphate	
s_1095	L-Glutamate	

Kinetic Law

Derived unit contains undeclared units

$$v_{176} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0627 \cdot \left(\frac{[\text{s}_0627]}{\text{ic}0627} \right) + \text{ep}1101 \cdot \left(\frac{[\text{s}_1101]}{\text{ic}1101} \right) + \text{ep}0654 \cdot \left(\frac{[\text{s}_0654]}{\text{ic}0654} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s}_1095]}{\text{ic}1095} \right) \right) \quad (353)$$

Table 709: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0627			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1101			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0654			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>

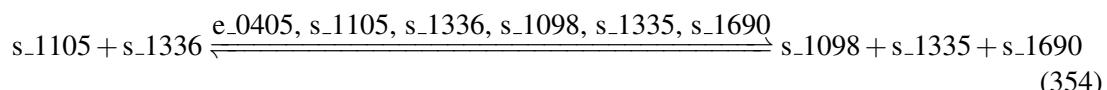
7.177 Reaction r_0686

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name glutamyl-tRNA reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 710: Properties of each reactant.

Id	Name	SBO
s_1105	L-Glutamyl-tRNA(Glu)	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 711: Properties of each modifier.

Id	Name	SBO
e_0405	hemA	0000460
s_1105	L-Glutamyl-tRNA(Glu)	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1098	L-Glutamate 1-semialdehyde	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1690	tRNA (Glu)	

Products

Table 712: Properties of each product.

Id	Name	SBO
s_1098	L-Glutamate 1-semialdehyde	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1690	tRNA (Glu)	

Kinetic Law

Derived unit contains undeclared units

$$v_{177} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1105} \cdot \left(\frac{[\text{s}_1105]}{\text{ic1105}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s}_1336]}{\text{ic1336}} \right) + \text{ep1098} \cdot \left(\frac{[\text{s}_1098]}{\text{ic1098}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s}_1335]}{\text{ic1335}} \right) + \text{ep1690} \cdot \left(\frac{[\text{s}_1690]}{\text{ic1690}} \right) \right) \quad (355)$$

Table 713: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.94227707563336 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.94227707563336 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1105			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1098			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1690			-1.000	dimensionless	<input checked="" type="checkbox"/>

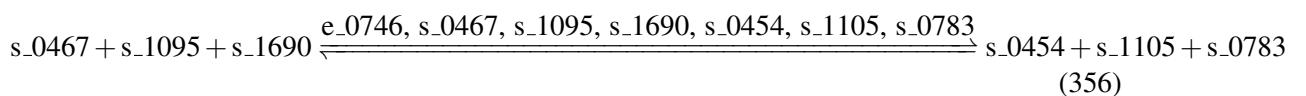
7.178 Reaction r_0687

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name Glutamyl-tRNA synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 714: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1095	L-Glutamate	
s_1690	tRNA (Glu)	

Modifiers

Table 715: Properties of each modifier.

Id	Name	SBO
e_0746	gltX	0000460
s_0467	ATP	
s_1095	L-Glutamate	
s_1690	tRNA (Glu)	
s_0454	AMP	
s_1105	L-Glutamyl-tRNA(Glu)	
s_0783	Diphosphate	

Products

Table 716: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_1105	L-Glutamyl-tRNA(Glu)	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{178} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s}_0467]}{\text{ic}0467} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s}_1095]}{\text{ic}1095} \right) + \text{ep}1690 \cdot \left(\frac{[\text{s}_1690]}{\text{ic}1690} \right) + \text{ep}0454 \cdot \left(\frac{[\text{s}_0454]}{\text{ic}0454} \right) + \text{ep}1105 \cdot \left(\frac{[\text{s}_1105]}{\text{ic}1105} \right) + \text{ep}0783 \cdot \left(\frac{[\text{s}_0783]}{\text{ic}0783} \right) \right) \quad (357)$$

Table 717: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.94227707563336 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.94227707563336 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1690			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1105			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

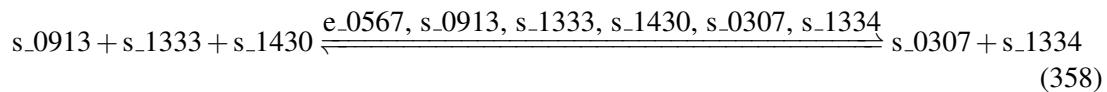
7.179 Reaction r_0695

This is a reversible reaction of three reactants forming two products influenced by six modifiers.

Name glyceraldehyde-3-phosphate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 718: Properties of each reactant.

Id	Name	SBO
s_0913	Glyceraldehyde 3-phosphate	
s_1333	Nicotinamide adenine dinucleotide	
s_1430	Phosphate	

Modifiers

Table 719: Properties of each modifier.

Id	Name	SBO
e_0567	gapA	0000460
s_0913	Glyceraldehyde 3-phosphate	
s_1333	Nicotinamide adenine dinucleotide	

Id	Name	SBO
s_1430	Phosphate	
s_0307	3-Phospho-D-glyceroyl phosphate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Products

Table 720: Properties of each product.

Id	Name	SBO
s_0307	3-Phospho-D-glyceroyl phosphate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{179} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0913} \cdot \left(\frac{[\text{s}_0913]}{\text{ic0913}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) + \text{ep0307} \cdot \left(\frac{[\text{s}_0307]}{\text{ic0307}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) \right) \quad (359)$$

Table 721: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.788	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.788	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0913			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0307			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

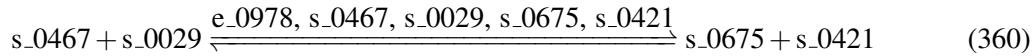
7.180 Reaction r_0697

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name glycerate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 722: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0029	(R)-Glycerate	

Modifiers

Table 723: Properties of each modifier.

Id	Name	SBO
e_0978	garK	0000460
s_0467	ATP	
s_0029	(R)-Glycerate	
s_0675	D-Glycerate 2-phosphate	
s_0421	ADP	

Products

Table 724: Properties of each product.

Id	Name	SBO
s_0675	D-Glycerate 2-phosphate	
s_0421	ADP	

Kinetic Law

Derived unit contains undeclared units

$$v_{180} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[s_0467]}{\text{ic0467}} \right) + \text{ep0029} \cdot \left(\frac{[s_0029]}{\text{ic0029}} \right) + \text{ep0675} \cdot \left(\frac{[s_0675]}{\text{ic0675}} \right) + \text{ep0421} \cdot \left(\frac{[s_0421]}{\text{ic0421}} \right) \right) \quad (361)$$

Table 725: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.63338475844011 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.63338475844011 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0029			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0675			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>

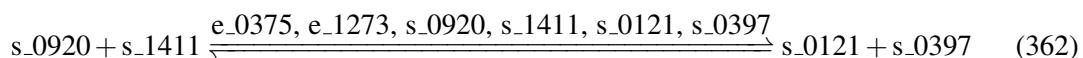
7.181 Reaction r_0706

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name glycerol-3-phosphate acyltransferase (C16:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 726: Properties of each reactant.

Id	Name	SBO
s_0920	Glycerol 3-phosphate	
s_1411	Palmitoyl-ACP (n-C16:0ACP)	

Modifiers

Table 727: Properties of each modifier.

Id	Name	SBO
e_0375	acpP	0000460
e_1273	plsB	0000460
s_0920	Glycerol 3-phosphate	
s_1411	Palmitoyl-ACP (n-C16:0ACP)	
s_0121	1-hexadecanoyl-sn-glycerol 3-phosphate	
s_0397	acyl carrier protein	

Products

Table 728: Properties of each product.

Id	Name	SBO
s_0121	1-hexadecanoyl-sn-glycerol 3-phosphate	
s_0397	acyl carrier protein	

Kinetic Law

Derived unit contains undeclared units

$$v_{181} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0920} \cdot \left(\frac{[\text{s_0920}]}{\text{ic0920}} \right) + \text{ep1411} \cdot \left(\frac{[\text{s_1411}]}{\text{ic1411}} \right) + \text{ep0121} \cdot \left(\frac{[\text{s_0121}]}{\text{ic0121}} \right) + \text{ep0397} \cdot \left(\frac{[\text{s_0397}]}{\text{ic0397}} \right) \right) \quad (363)$$

Table 729: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0920			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1411			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0121			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>

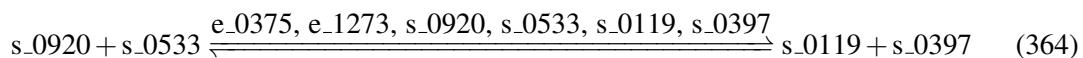
7.182 Reaction r_0707

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name glycerol-3-phosphate acyltransferase (C16:1)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 730: Properties of each reactant.

Id	Name	SBO
s_0920	Glycerol 3-phosphate	
s_0533	cis-hexadec-9-enoyl-[acyl-carrier protein] (n-C16:1)	

Modifiers

Table 731: Properties of each modifier.

Id	Name	SBO
e_0375	acpP	0000460
e_1273	plsB	0000460
s_0920	Glycerol 3-phosphate	
s_0533	cis-hexadec-9-enoyl-[acyl-carrier protein] (n-C16:1)	
s_0119	1-hexadec-9-enoyl-sn-glycerol 3-phosphate	
s_0397	acyl carrier protein	

Products

Table 732: Properties of each product.

Id	Name	SBO
s_0119	1-hexadec-9-enoyl-sn-glycerol 3-phosphate	
s_0397	acyl carrier protein	

Kinetic Law

Derived unit contains undeclared units

$$v_{182} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0920} \cdot \left(\frac{[\text{s}_0920]}{\text{ic0920}} \right) + \text{ep0533} \cdot \left(\frac{[\text{s}_0533]}{\text{ic0533}} \right) + \text{ep0119} \cdot \left(\frac{[\text{s}_0119]}{\text{ic0119}} \right) + \text{ep0397} \cdot \left(\frac{[\text{s}_0397]}{\text{ic0397}} \right) \right) \quad (365)$$

Table 733: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0920			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0533			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0119			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>

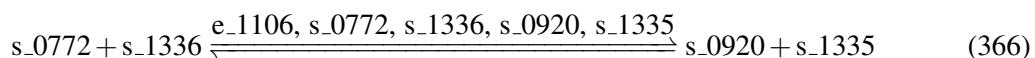
7.183 Reaction r_0712

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name glycerol-3-phosphate dehydrogenase (NADP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 734: Properties of each reactant.

Id	Name	SBO
s_0772	Dihydroxyacetone phosphate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 735: Properties of each modifier.

Id	Name	SBO
e_1106	gpsA	0000460
s_0772	Dihydroxyacetone phosphate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0920	Glycerol 3-phosphate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 736: Properties of each product.

Id	Name	SBO
s_0920	Glycerol 3-phosphate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{183} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0772 \cdot \left(\frac{[\text{s_0772}]}{\text{ic0772}} \right) + \text{ep}1336 \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep}0920 \cdot \left(\frac{[\text{s_0920}]}{\text{ic0920}} \right) + \text{ep}1335 \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) \right) \quad (367)$$

Table 737: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.019	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.019	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0772			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0920			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

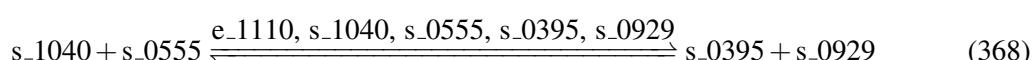
7.184 Reaction r_0724

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name glycine C-acetyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 738: Properties of each reactant.

Id	Name	SBO
s_1040	L-2-Amino-3-oxobutanoate	
s_0555	Coenzyme A	

Modifiers

Table 739: Properties of each modifier.

Id	Name	SBO
e_1110	tbl	0000460
s_1040	L-2-Amino-3-oxobutanoate	
s_0555	Coenzyme A	
s_0395	Acetyl-CoA	
s_0929	Glycine	

Products

Table 740: Properties of each product.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0929	Glycine	

Kinetic Law

Derived unit contains undeclared units

$$v_{184} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1040} \cdot \left(\frac{[\text{s}_1040]}{\text{ic1040}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s}_0555]}{\text{ic0555}} \right) + \text{ep0395} \cdot \left(\frac{[\text{s}_0395]}{\text{ic0395}} \right) + \text{ep0929} \cdot \left(\frac{[\text{s}_0929]}{\text{ic0929}} \right) \right) \quad (369)$$

Table 741: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1040			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0555			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0395			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0929			-1.000	dimensionless	<input checked="" type="checkbox"/>

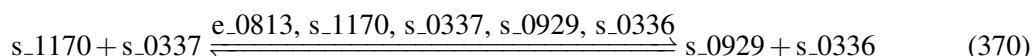
7.185 Reaction r_0726

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name glycine hydroxymethyltransferase, reversible

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 742: Properties of each reactant.

Id	Name	SBO
s_{_1170}	L-Serine	
s_{_0337}	5,6,7,8-Tetrahydrofolate	

Modifiers

Table 743: Properties of each modifier.

Id	Name	SBO
e_{_0813}	glyA	0000460
s_{_1170}	L-Serine	
s_{_0337}	5,6,7,8-Tetrahydrofolate	
s_{_0929}	Glycine	
s_{_0336}	5,10-Methylenetetrahydrofolate	

Products

Table 744: Properties of each product.

Id	Name	SBO
s_0929	Glycine	
s_0336	5,10-Methylenetetrahydrofolate	

Kinetic Law

Derived unit contains undeclared units

$$v_{185} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}1170 \cdot \left(\frac{[\text{s_1170}]}{\text{ic1170}} \right) + \text{ep}0337 \cdot \left(\frac{[\text{s_0337}]}{\text{ic0337}} \right) + \text{ep}0929 \cdot \left(\frac{[\text{s_0929}]}{\text{ic0929}} \right) + \text{ep}0336 \cdot \left(\frac{[\text{s_0336}]}{\text{ic0336}} \right) \right) \quad (371)$$

Table 745: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.063	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.063	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1170			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0337			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0929			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0336			-1.000	dimensionless	<input checked="" type="checkbox"/>

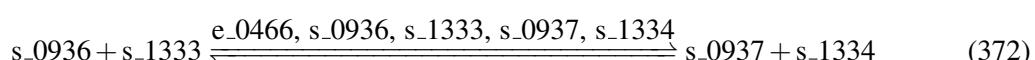
7.186 Reaction r_0731

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Glycolaldehyde dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 746: Properties of each reactant.

Id	Name	SBO
s_0936	Glycolaldehyde	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 747: Properties of each modifier.

Id	Name	SBO
e_0466	aldA	0000460
s_0936	Glycolaldehyde	
s_1333	Nicotinamide adenine dinucleotide	
s_0937	Glycolate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Products

Table 748: Properties of each product.

Id	Name	SBO
s_0937	Glycolate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{186} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0936} \cdot \left(\frac{[\text{s}_0936]}{\text{ic0936}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) + \text{ep0937} \cdot \left(\frac{[\text{s}_0937]}{\text{ic0937}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) \right) \quad (373)$$

Table 749: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0936			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0937			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

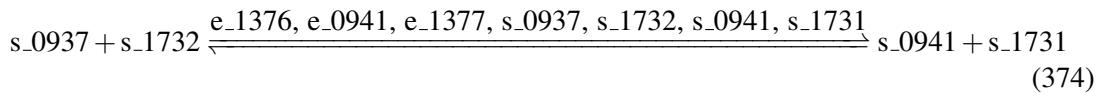
7.187 Reaction r_0734

This is a reversible reaction of two reactants forming two products influenced by seven modifiers.

Name Glycolate oxidase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 750: Properties of each reactant.

Id	Name	SBO
s_0937	Glycolate	
s_1732	Ubiquinone-8	

Modifiers

Table 751: Properties of each modifier.

Id	Name	SBO
e_1376	glcF	0000460
e_0941	glcD	0000460
e_1377	glcE	0000460
s_0937	Glycolate	
s_1732	Ubiquinone-8	
s_0941	Glyoxylate	
s_1731	Ubiquinol-8	

Products

Table 752: Properties of each product.

Id	Name	SBO
s_0941	Glyoxylate	
s_1731	Ubiquinol-8	

Kinetic Law

Derived unit contains undeclared units

$$v_{187} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0937} \cdot \left(\frac{[\text{s_0937}]}{\text{ic0937}} \right) + \text{ep1732} \cdot \left(\frac{[\text{s_1732}]}{\text{ic1732}} \right) + \text{ep0941} \cdot \left(\frac{[\text{s_0941}]}{\text{ic0941}} \right) + \text{ep1731} \cdot \left(\frac{[\text{s_1731}]}{\text{ic1731}} \right) \right) \quad (375)$$

Table 753: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.63338477495988 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.63338477495988 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0937			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1732			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0941			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1731			-1.000	dimensionless	<input checked="" type="checkbox"/>

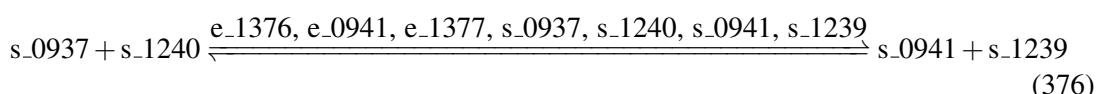
7.188 Reaction r_0735

This is a reversible reaction of two reactants forming two products influenced by seven modifiers.

Name Glycolate oxidase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 754: Properties of each reactant.

Id	Name	SBO
s_0937	Glycolate	
s_1240	Menaquinone 8	

Modifiers

Table 755: Properties of each modifier.

Id	Name	SBO
e_1376	glcF	0000460
e_0941	glcD	0000460
e_1377	glcE	0000460
s_0937	Glycolate	
s_1240	Menaquinone 8	
s_0941	Glyoxylate	
s_1239	Menaquinol 8	

Products

Table 756: Properties of each product.

Id	Name	SBO
s_0941	Glyoxylate	
s_1239	Menaquinol 8	

Kinetic Law

Derived unit contains undeclared units

$$v_{188} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0937 \cdot \left(\frac{[\text{s}_0937]}{\text{ic}0937} \right) + \text{ep}1240 \cdot \left(\frac{[\text{s}_1240]}{\text{ic}1240} \right) + \text{ep}0941 \cdot \left(\frac{[\text{s}_0941]}{\text{ic}0941} \right) + \text{ep}1239 \cdot \left(\frac{[\text{s}_1239]}{\text{ic}1239} \right) \right) \quad (377)$$

Table 757: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.63338474145563 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			$4.63338474145563 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0937			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1240			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0941			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1239			-1.000	dimensionless	<input checked="" type="checkbox"/>

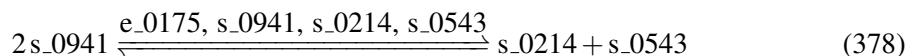
7.189 Reaction r_0739

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name glyoxalate carboligase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 758: Properties of each reactant.

Id	Name	SBO
s_0941	Glyoxylate	

Modifiers

Table 759: Properties of each modifier.

Id	Name	SBO
e_0175	gcl	0000460
s_0941	Glyoxylate	
s_0214	2-Hydroxy-3-oxopropanoate	
s_0543	CO2	

Products

Table 760: Properties of each product.

Id	Name	SBO
s_0214	2-Hydroxy-3-oxopropanoate	
s_0543	CO2	

Kinetic Law

Derived unit contains undeclared units

$$v_{189} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0941} \cdot \left(\frac{[\text{s_0941}]}{\text{ic0941}} \right) + \text{ep0214} \cdot \left(\frac{[\text{s_0214}]}{\text{ic0214}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) \right) \quad (379)$$

Table 761: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.63338475820775 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.63338475820775 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0941			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0214			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

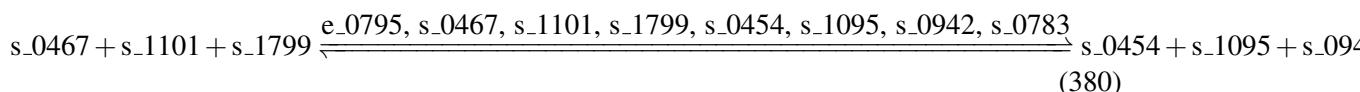
7.190 Reaction r_0741

This is a reversible reaction of three reactants forming four products influenced by eight modifiers.

Name GMP synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 762: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1101	L-Glutamine	
s_1799	Xanthosine 5'-phosphate	

Modifiers

Table 763: Properties of each modifier.

Id	Name	SBO
e_0795	guaA	0000460
s_0467	ATP	
s_1101	L-Glutamine	
s_1799	Xanthosine 5'-phosphate	
s_0454	AMP	
s_1095	L-Glutamate	
s_0942	GMP	
s_0783	Diphosphate	

Products

Table 764: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_1095	L-Glutamate	
s_0942	GMP	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned}
 v_{190} = & \text{vol}(\text{cell}) \cdot v0 \\
 & \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1101} \cdot \left(\frac{[\text{s_1101}]}{\text{ic1101}} \right) + \text{ep1799} \cdot \left(\frac{[\text{s_1799}]}{\text{ic1799}} \right) + \text{ep0454} \right. \\
 & \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep0942} \cdot \left(\frac{[\text{s_0942}]}{\text{ic0942}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right)
 \end{aligned} \tag{381}$$

Table 765: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1101			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1799			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0942			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

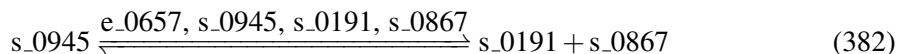
7.191 Reaction r_0744

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name GTP cyclohydrolase I

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 766: Properties of each reactant.

Id	Name	SBO
s_0945	GTP	

Modifiers

Table 767: Properties of each modifier.

Id	Name	SBO
e_0657	folE	0000460
s_0945	GTP	
s_0191	2-Amino-4-hydroxy-6-(erythro-1,2,3-trihydroxypropyl)dihydropteridine triphosphate	
s_0867	Formate	

Products

Table 768: Properties of each product.

Id	Name	SBO
s_0191	2-Amino-4-hydroxy-6-(erythro-1,2,3-trihydroxypropyl)dihydropteridine triphosphate	
s_0867	Formate	

Kinetic Law

Derived unit contains undeclared units

$$v_{191} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0945} \cdot \left(\frac{[\text{s_0945}]}{\text{ic0945}} \right) + \text{ep0191} \cdot \left(\frac{[\text{s_0191}]}{\text{ic0191}} \right) + \text{ep0867} \cdot \left(\frac{[\text{s_0867}]}{\text{ic0867}} \right) \right) \quad (383)$$

Table 769: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0945			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0191			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0867			-1.000	dimensionless	<input checked="" type="checkbox"/>

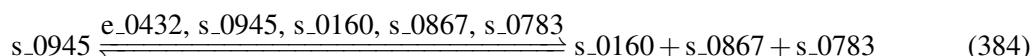
7.192 Reaction r_0745

This is a reversible reaction of one reactant forming three products influenced by five modifiers.

Name GTP cyclohydrolase II (25drapp)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 770: Properties of each reactant.

Id	Name	SBO
s_0945	GTP	

Modifiers

Table 771: Properties of each modifier.

Id	Name	SBO
e_0432	ribA	0000460
s_0945	GTP	
s_0160	2,5-Diamino-6-(ribosylamino)-4-(3H)-pyrimidinone 5'-phosphate	
s_0867	Formate	
s_0783	Diphosphate	

Products

Table 772: Properties of each product.

Id	Name	SBO
s_0160	2,5-Diamino-6-(ribosylamino)-4-(3H)-pyrimidinone 5'-phosphate	
s_0867	Formate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{192} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0945} \cdot \left(\frac{[\text{s}_0945]}{\text{ic0945}} \right) + \text{ep0160} \cdot \left(\frac{[\text{s}_0160]}{\text{ic0160}} \right) + \text{ep0867} \cdot \left(\frac{[\text{s}_0867]}{\text{ic0867}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (385)$$

Table 773: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0945			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0160			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0867			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

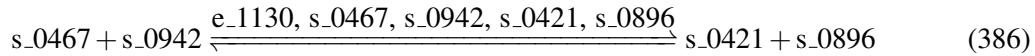
7.193 Reaction r_0754

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name guanylate kinase (GMP:ATP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 774: Properties of each reactant.

Id	Name	SBO
s_{_0467}	ATP	
s_{_0942}	GMP	

Modifiers

Table 775: Properties of each modifier.

Id	Name	SBO
e_{_1130}	gmk	0000460
s_{_0467}	ATP	
s_{_0942}	GMP	
s_{_0421}	ADP	
s_{_0896}	GDP	

Products

Table 776: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0896	GDP	

Kinetic Law

Derived unit contains undeclared units

$$v_{193} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0942} \cdot \left(\frac{[\text{s_0942}]}{\text{ic0942}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0896} \cdot \left(\frac{[\text{s_0896}]}{\text{ic0896}} \right) \right) \quad (387)$$

Table 777: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0942			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0896			-1.000	dimensionless	<input checked="" type="checkbox"/>

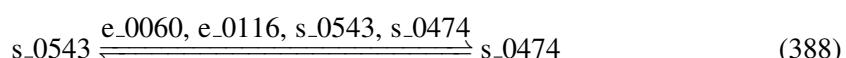
7.194 Reaction r_0755

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name HCO3 equilibration reaction

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 778: Properties of each reactant.

Id	Name	SBO
s_0543	CO2	

Modifiers

Table 779: Properties of each modifier.

Id	Name	SBO
e_0060	can	0000460
e_0116	cynT	0000460
s_0543	CO2	
s_0474	Bicarbonate	

Product

Table 780: Properties of each product.

Id	Name	SBO
s_0474	Bicarbonate	

Kinetic Law

Derived unit contains undeclared units

$$v_{194} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0543} \cdot \left(\frac{[\text{s}_0543]}{\text{ic0543}} \right) + \text{ep0474} \cdot \left(\frac{[\text{s}_0474]}{\text{ic0474}} \right) \right) \quad (389)$$

Table 781: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.072	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.072	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0543			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0474			-1.000	dimensionless	<input checked="" type="checkbox"/>

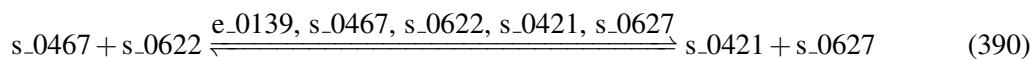
7.195 Reaction r_0761

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name hexokinase (D-fructose:ATP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 782: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0622	D-Fructose	

Modifiers

Table 783: Properties of each modifier.

Id	Name	SBO
e_0139	mak	0000460
s_0467	ATP	
s_0622	D-Fructose	
s_0421	ADP	
s_0627	D-Fructose 6-phosphate	

Products

Table 784: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0627	D-Fructose 6-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{195} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0622} \cdot \left(\frac{[\text{s_0622}]}{\text{ic0622}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0627} \cdot \left(\frac{[\text{s_0627}]}{\text{ic0627}} \right) \right) \quad (391)$$

Table 785: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.055	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.055	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0622			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0627			-1.000	dimensionless	<input checked="" type="checkbox"/>

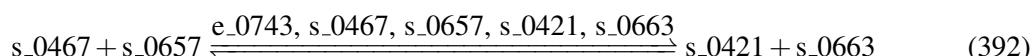
7.196 Reaction r_0762

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name hexokinase (D-glucose:ATP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 786: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0657	D-Glucose	

Modifiers

Table 787: Properties of each modifier.

Id	Name	SBO
e_0743	glk	0000460
s_0467	ATP	
s_0657	D-Glucose	
s_0421	ADP	
s_0663	D-Glucose 6-phosphate	

Products

Table 788: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0663	D-Glucose 6-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{196} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0657} \cdot \left(\frac{[\text{s}_0657]}{\text{ic0657}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep0663} \cdot \left(\frac{[\text{s}_0663]}{\text{ic0663}} \right) \right) \quad (393)$$

Table 789: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.912	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.912	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0657			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0663			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.197 Reaction r_0763

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name histidinol dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 790: Properties of each reactant.

Id	Name	SBO
s_{1109}	L-Histidinol	
s_{1333}	Nicotinamide adenine dinucleotide	

Modifiers

Table 791: Properties of each modifier.

Id	Name	SBO
e_{0606}	hisD	0000460
s_{1109}	L-Histidinol	
s_{1333}	Nicotinamide adenine dinucleotide	
s_{1106}	L-Histidine	
s_{1334}	Nicotinamide adenine dinucleotide - reduced	

Products

Table 792: Properties of each product.

Id	Name	SBO
s_{1106}	L-Histidine	
s_{1334}	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{197} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1109} \cdot \left(\frac{[s_{1109}]}{\text{ic1109}} \right) + \text{ep1333} \cdot \left(\frac{[s_{1333}]}{\text{ic1333}} \right) + \text{ep1106} \cdot \left(\frac{[s_{1106}]}{\text{ic1106}} \right) + \text{ep1334} \cdot \left(\frac{[s_{1334}]}{\text{ic1334}} \right) \right) \quad (395)$$

Table 793: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1109			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1106			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-2.000	dimensionless	<input checked="" type="checkbox"/>

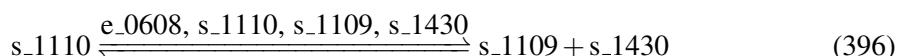
7.198 Reaction r_0764

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name histidinol-phosphatase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 794: Properties of each reactant.

Id	Name	SBO
s_1110	L-Histidinol phosphate	

Modifiers

Table 795: Properties of each modifier.

Id	Name	SBO
e_0608	hisB	0000460
s_1110	L-Histidinol phosphate	
s_1109	L-Histidinol	
s_1430	Phosphate	

Products

Table 796: Properties of each product.

Id	Name	SBO
s_1109	L-Histidinol	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{198} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1110} \cdot \left(\frac{[\text{s}_1110]}{\text{ic1110}} \right) + \text{ep1109} \cdot \left(\frac{[\text{s}_1109]}{\text{ic1109}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) \right) \quad (397)$$

Table 797: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1110			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1109			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

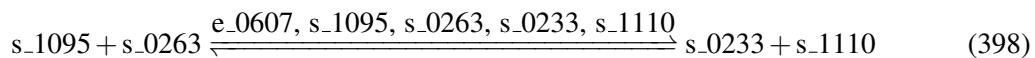
7.199 Reaction r_0765

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name histidinol-phosphate transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 798: Properties of each reactant.

Id	Name	SBO
s_1095	L-Glutamate	

Id	Name	SBO
s_0263	3-(Imidazol-4-yl)-2-oxopropyl phosphate	

Modifiers

Table 799: Properties of each modifier.

Id	Name	SBO
e_0607	hisC	0000460
s_1095	L-Glutamate	
s_0263	3-(Imidazol-4-yl)-2-oxopropyl phosphate	
s_0233	2-Oxoglutarate	
s_1110	L-Histidinol phosphate	

Products

Table 800: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1110	L-Histidinol phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{199} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1095} \cdot \left(\frac{[\text{s}_1095]}{\text{ic1095}} \right) + \text{ep0263} \cdot \left(\frac{[\text{s}_0263]}{\text{ic0263}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s}_0233]}{\text{ic0233}} \right) + \text{ep1110} \cdot \left(\frac{[\text{s}_1110]}{\text{ic1110}} \right) \right) \quad (399)$$

Table 801: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0263			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1110			-1.000	dimensionless	<input checked="" type="checkbox"/>

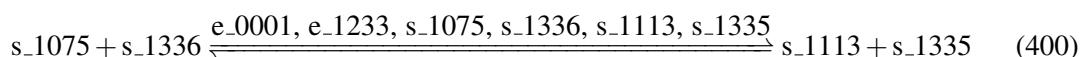
7.200 Reaction r_0769

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name homoserine dehydrogenase (NADPH)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 802: Properties of each reactant.

Id	Name	SBO
s_1075	L-Aspartate 4-semialdehyde	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 803: Properties of each modifier.

Id	Name	SBO
e_0001	thrA	0000460
e_1233	metL	0000460
s_1075	L-Aspartate 4-semialdehyde	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1113	L-Homoserine	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 804: Properties of each product.

Id	Name	SBO
s_1113	L-Homoserine	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{200} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1075} \cdot \left(\frac{[\text{s_1075}]}{\text{ic1075}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep1113} \cdot \left(\frac{[\text{s_1113}]}{\text{ic1113}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) \right) \quad (401)$$

Table 805: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.180	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.180	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1075			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1113			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

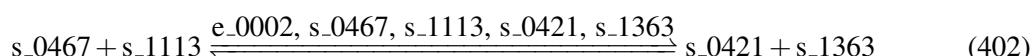
7.201 Reaction r_0770

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name homoserine kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 806: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1113	L-Homoserine	

Modifiers

Table 807: Properties of each modifier.

Id	Name	SBO
e_0002	thrB	0000460
s_0467	ATP	
s_1113	L-Homoserine	
s_0421	ADP	
s_1363	O-Phospho-L-homoserine	

Products

Table 808: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1363	O-Phospho-L-homoserine	

Kinetic Law

Derived unit contains undeclared units

$$v_{201} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep1113} \cdot \left(\frac{[\text{s}_1113]}{\text{ic1113}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep1363} \cdot \left(\frac{[\text{s}_1363]}{\text{ic1363}} \right) \right) \quad (403)$$

Table 809: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.158	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.158	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1113			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1363			-1.000	dimensionless	<input checked="" type="checkbox"/>

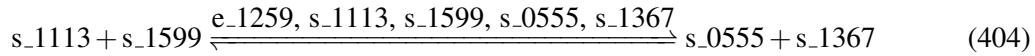
7.202 Reaction r_0771

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name homoserine O-succinyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 810: Properties of each reactant.

Id	Name	SBO
s_1113	L-Homoserine	
s_1599	Succinyl-CoA	

Modifiers

Table 811: Properties of each modifier.

Id	Name	SBO
e_1259	metA	0000460
s_1113	L-Homoserine	
s_1599	Succinyl-CoA	
s_0555	Coenzyme A	
s_1367	O-Succinyl-L-homoserine	

Products

Table 812: Properties of each product.

Id	Name	SBO
s_0555	Coenzyme A	
s_1367	O-Succinyl-L-homoserine	

Kinetic Law

Derived unit contains undeclared units

$$v_{202} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1113} \cdot \left(\frac{[s_{1113}]}{\text{ic1113}} \right) + \text{ep1599} \cdot \left(\frac{[s_{1599}]}{\text{ic1599}} \right) + \text{ep0555} \cdot \left(\frac{[s_{0555}]}{\text{ic0555}} \right) + \text{ep1367} \cdot \left(\frac{[s_{1367}]}{\text{ic1367}} \right) \right) \quad (405)$$

Table 813: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1113			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1599			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1367			-1.000	dimensionless	<input checked="" type="checkbox"/>

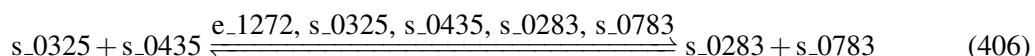
7.203 Reaction r_0775

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Hydroxybenzoate octaprenyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 814: Properties of each reactant.

Id	Name	SBO
s_0325	4-Hydroxybenzoate	
s_0435	all-trans-Octaprenyl diphosphate	

Modifiers

Table 815: Properties of each modifier.

Id	Name	SBO
e_1272	ubiA	0000460
s_0325	4-Hydroxybenzoate	
s_0435	all-trans-Octaprenyl diphosphate	
s_0283	3-Octaprenyl-4-hydroxybenzoate	
s_0783	Diphosphate	

Products

Table 816: Properties of each product.

Id	Name	SBO
s_0283	3-Octaprenyl-4-hydroxybenzoate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{203} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0325} \cdot \left(\frac{[\text{s_0325}]}{\text{ic0325}} \right) + \text{ep0435} \cdot \left(\frac{[\text{s_0435}]}{\text{ic0435}} \right) + \text{ep0283} \cdot \left(\frac{[\text{s_0283}]}{\text{ic0283}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (407)$$

Table 817: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0325			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0435			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0283			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

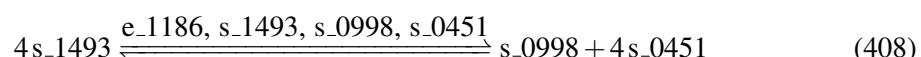
7.204 Reaction r_0777

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name hydroxymethylbilane synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 818: Properties of each reactant.

Id	Name	SBO
s_1493	Porphobilinogen	

Modifiers

Table 819: Properties of each modifier.

Id	Name	SBO
e_1186	hemC	0000460
s_1493	Porphobilinogen	
s_0998	Hydroxymethylbilane	
s_0451	Ammonium	

Products

Table 820: Properties of each product.

Id	Name	SBO
s_0998	Hydroxymethylbilane	
s_0451	Ammonium	

Kinetic Law

Derived unit contains undeclared units

$$v_{204} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1493} \cdot \left(\frac{[\text{s}_1493]}{\text{ic1493}} \right) + \text{ep0998} \cdot \left(\frac{[\text{s}_0998]}{\text{ic0998}} \right) + \text{ep0451} \cdot \left(\frac{[\text{s}_0451]}{\text{ic0451}} \right) \right) \quad (409)$$

Table 821: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.1778463445417 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.1778463445417 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1493			4.000	dimensionless	<input checked="" type="checkbox"/>
ep0998			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			-4.000	dimensionless	<input checked="" type="checkbox"/>

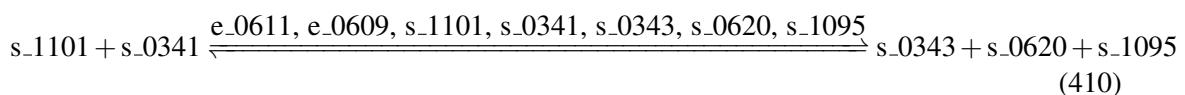
7.205 Reaction r_0784

This is a reversible reaction of two reactants forming three products influenced by seven modifiers.

Name Imidazole-glycerol-3-phosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 822: Properties of each reactant.

Id	Name
s_1101	L-Glutamine
s_0341	5-[(5-phospho-1-deoxyribulos-1-ylamino)methylideneamino]-1-(5-phosphoribosyl)imidazole-4-carboxamide

Modifiers

Table 823: Properties of each modifier.

Id	Name
e_0611	hisF
e_0609	hisH
s_1101	L-Glutamine
s_0341	5-[(5-phospho-1-deoxyribulos-1-ylamino)methylideneamino]-1-(5-phosphoribosyl)imidazole-4-carboxamide
s_0343	5-Amino-1-(5-Phospho-D-ribosyl)imidazole-4-carboxamide
s_0620	D-erythro-1-(Imidazol-4-yl)glycerol 3-phosphate
s_1095	L-Glutamate

Products

Table 824: Properties of each product.

Id	Name	SBO
s_0343	5-Amino-1-(5-Phospho-D-ribosyl)imidazole-4-carboxamide	
s_0620	D-erythro-1-(Imidazol-4-yl)glycerol 3-phosphate	

Id	Name	SBO
s_1095	L-Glutamate	

Kinetic Law

Derived unit contains undeclared units

$$v_{205} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1101} \cdot \left(\frac{[\text{s_1101}]}{\text{ic1101}} \right) + \text{ep0341} \cdot \left(\frac{[\text{s_0341}]}{\text{ic0341}} \right) + \text{ep0343} \cdot \left(\frac{[\text{s_0343}]}{\text{ic0343}} \right) + \text{ep0620} \cdot \left(\frac{[\text{s_0620}]}{\text{ic0620}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) \right) \quad (411)$$

Table 825: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1101			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0341			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0343			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0620			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>

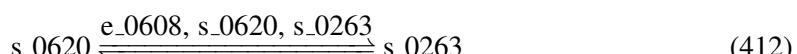
7.206 Reaction r_0785

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name imidazoleglycerol-phosphate dehydratase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 826: Properties of each reactant.

Id	Name	SBO
s_0620	D-erythro-1-(Imidazol-4-yl)glycerol 3-phosphate	

Modifiers

Table 827: Properties of each modifier.

Id	Name	SBO
e_0608	hisB	0000460
s_0620	D-erythro-1-(Imidazol-4-yl)glycerol 3-phosphate	
s_0263	3-(Imidazol-4-yl)-2-oxopropyl phosphate	

Product

Table 828: Properties of each product.

Id	Name	SBO
s_0263	3-(Imidazol-4-yl)-2-oxopropyl phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{206} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0620} \cdot \left(\frac{[\text{s}_0620]}{\text{ic0620}} \right) + \text{ep0263} \cdot \left(\frac{[\text{s}_0263]}{\text{ic0263}} \right) \right) \quad (413)$$

Table 829: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0620			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0263			-1.000	dimensionless	<input checked="" type="checkbox"/>

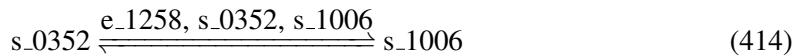
7.207 Reaction r_0786

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name IMP cyclohydrolase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 830: Properties of each reactant.

Id	Name	SBO
s_0352	5-Formamido-1-(5-phospho-D-ribosyl)imidazole-4-carboxamide	

Modifiers

Table 831: Properties of each modifier.

Id	Name	SBO
e_1258	purH	0000460
s_0352	5-Formamido-1-(5-phospho-D-ribosyl)imidazole-4-carboxamide	
s_1006	IMP	

Product

Table 832: Properties of each product.

Id	Name	SBO
s_1006	IMP	

Kinetic Law

Derived unit contains undeclared units

$$v_{207} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0352 \cdot \left(\frac{[s_{_0352}]}{\text{ic}0352} \right) + \text{ep}1006 \cdot \left(\frac{[s_{_1006}]}{\text{ic}1006} \right) \right) \quad (415)$$

Table 833: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.075	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.075	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0352			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1006			-1.000	dimensionless	<input checked="" type="checkbox"/>

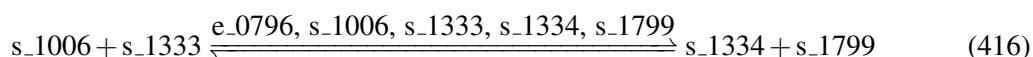
7.208 Reaction r_0787

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name IMP dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 834: Properties of each reactant.

Id	Name	SBO
s_1006	IMP	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 835: Properties of each modifier.

Id	Name	SBO
e_0796	guaB	0000460
s_1006	IMP	
s_1333	Nicotinamide adenine dinucleotide	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1799	Xanthosine 5'-phosphate	

Products

Table 836: Properties of each product.

Id	Name	SBO
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1799	Xanthosine 5'-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{208} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1006} \cdot \left(\frac{[\text{s_1006}]}{\text{ic1006}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep1799} \cdot \left(\frac{[\text{s_1799}]}{\text{ic1799}} \right) \right) \quad (417)$$

Table 837: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1006			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1799			-1.000	dimensionless	<input checked="" type="checkbox"/>

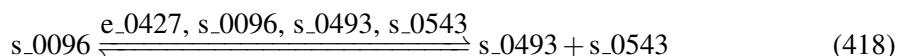
7.209 Reaction r_0788

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name indole-3-glycerol-phosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 838: Properties of each reactant.

Id	Name	SBO
s_0096	1-(2-Carboxyphenylamino)-1-deoxy-D-ribulose 5-phosphate	

Modifiers

Table 839: Properties of each modifier.

Id	Name	SBO
e_0427	trpC	0000460

Id	Name	SBO
s_0096	1-(2-Carboxyphenylamino)-1-deoxy-D-ribulose 5-phosphate	
s_0493	C’-(3-Indolyl)-glycerol 3-phosphate	
s_0543	CO2	

Products

Table 840: Properties of each product.

Id	Name	SBO
s_0493	C’-(3-Indolyl)-glycerol 3-phosphate	
s_0543	CO2	

Kinetic Law

Derived unit contains undeclared units

$$v_{209} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0096} \cdot \left(\frac{[\text{s_0096}]}{\text{ic0096}} \right) + \text{ep0493} \cdot \left(\frac{[\text{s_0493}]}{\text{ic0493}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) \right) \quad (419)$$

Table 841: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0096			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0493			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

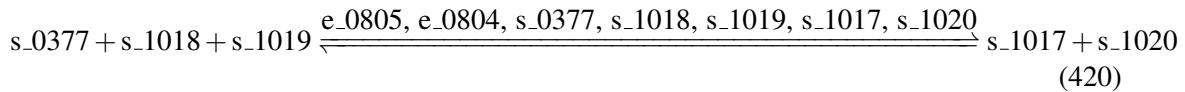
7.210 Reaction r_0796

This is a reversible reaction of three reactants forming two products influenced by seven modifiers.

Name ISC [2Fe-2S] regeneration

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 842: Properties of each reactant.

Id	Name	SBO
s_{_0377}	[2Fe-1S] desulfurated iron-sulfur cluster	
s_{_1018}	IscS with bound sulfur	
s_{_1019}	IscU scaffold protein	

Modifiers

Table 843: Properties of each modifier.

Id	Name	SBO
e_{_0805}	iscS	0000460
e_{_0804}	nifU	0000460
s_{_0377}	[2Fe-1S] desulfurated iron-sulfur cluster	
s_{_1018}	IscS with bound sulfur	
s_{_1019}	IscU scaffold protein	
s_{_1017}	IscS sulfur acceptor protein	
s_{_1020}	IscU with bound [2Fe-2S] cluster	

Products

Table 844: Properties of each product.

Id	Name	SBO
s_{_1017}	IscS sulfur acceptor protein	
s_{_1020}	IscU with bound [2Fe-2S] cluster	

Kinetic Law

Derived unit contains undeclared units

$$v_{210} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0377 \cdot \left(\frac{[\text{s_0377}]}{\text{ic}0377} \right) + \text{ep}1018 \cdot \left(\frac{[\text{s_1018}]}{\text{ic}1018} \right) + \text{ep}1019 \cdot \left(\frac{[\text{s_1019}]}{\text{ic}1019} \right) + \text{ep}1017 \cdot \left(\frac{[\text{s_1017}]}{\text{ic}1017} \right) + \text{ep}1020 \cdot \left(\frac{[\text{s_1020}]}{\text{ic}1020} \right) \right) \quad (421)$$

Table 845: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467753811 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467753811 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0377			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1018			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1019			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1017			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1020			-1.000	dimensionless	<input checked="" type="checkbox"/>

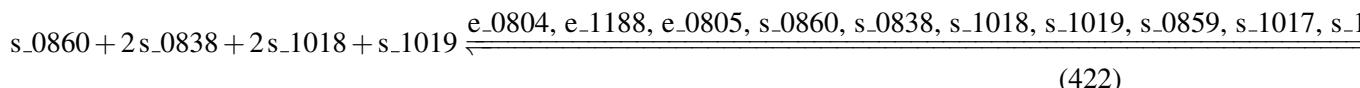
7.211 Reaction r_0797

This is a reversible reaction of four reactants forming three products influenced by ten modifiers.

Name ISC [2Fe-2S] Synthesis

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 846: Properties of each reactant.

Id	Name	SBO
s_0860	Flavin adenine dinucleotide reduced	
s_0838	Fe2+	
s_1018	IscS with bound sulfur	
s_1019	IscU scaffold protein	

Modifiers

Table 847: Properties of each modifier.

Id	Name	SBO
e_0804	nifU	0000460
e_1188	cyaY	0000460
e_0805	iscS	0000460
s_0860	Flavin adenine dinucleotide reduced	
s_0838	Fe2+	
s_1018	IscS with bound sulfur	
s_1019	IscU scaffold protein	
s_0859	Flavin adenine dinucleotide oxidized	
s_1017	IscS sulfur acceptor protein	
s_1020	IscU with bound [2Fe-2S] cluster	

Products

Table 848: Properties of each product.

Id	Name	SBO
s_0859	Flavin adenine dinucleotide oxidized	
s_1017	IscS sulfur acceptor protein	
s_1020	IscU with bound [2Fe-2S] cluster	

Kinetic Law

Derived unit contains undeclared units

$$v_{211} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep0860} \cdot \left(\frac{[\text{s_0860}]}{\text{ic0860}} \right) + \text{ep0838} \cdot \left(\frac{[\text{s_0838}]}{\text{ic0838}} \right) + \text{ep1018} \cdot \left(\frac{[\text{s_1018}]}{\text{ic1018}} \right) + \text{ep1019} \cdot \left(\frac{[\text{s_1019}]}{\text{ic1019}} \right) + \text{ep0859} \cdot \left(\frac{[\text{s_0859}]}{\text{ic0859}} \right) + \text{ep1017} \cdot \left(\frac{[\text{s_1017}]}{\text{ic1017}} \right) + \text{ep1020} \cdot \left(\frac{[\text{s_1020}]}{\text{ic1020}} \right) \right) \quad (423)$$

Table 849: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.96157859771697 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.96157859771697 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0838			2.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1018			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1019			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1017			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep1020			-1.000	dimensionless	<input checked="" type="checkbox"/>

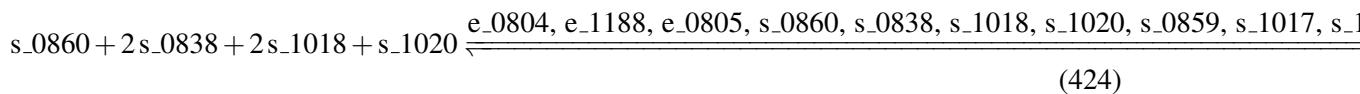
7.212 Reaction r_0798

This is a reversible reaction of four reactants forming three products influenced by ten modifiers.

Name ISC [2Fe-2S] Synthesis II

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 850: Properties of each reactant.

Id	Name	SBO
s_0860	Flavin adenine dinucleotide reduced	
s_0838	Fe2+	
s_1018	IscS with bound sulfur	
s_1020	IscU with bound [2Fe-2S] cluster	

Modifiers

Table 851: Properties of each modifier.

Id	Name	SBO
e_0804	nifU	0000460
e_1188	cyaY	0000460
e_0805	iscS	0000460
s_0860	Flavin adenine dinucleotide reduced	
s_0838	Fe2+	
s_1018	IscS with bound sulfur	
s_1020	IscU with bound [2Fe-2S] cluster	

Id	Name	SBO
s_0859	Flavin adenine dinucleotide oxidized	
s_1017	IscS sulfur acceptor protein	
s_1022	IscU with two bound [2Fe-2S] clusters	

Products

Table 852: Properties of each product.

Id	Name	SBO
s_0859	Flavin adenine dinucleotide oxidized	
s_1017	IscS sulfur acceptor protein	
s_1022	IscU with two bound [2Fe-2S] clusters	

Kinetic Law

Derived unit contains undeclared units

$$v_{212} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep0860} \cdot \left(\frac{[\text{s_0860}]}{\text{ic0860}} \right) + \text{ep0838} \cdot \left(\frac{[\text{s_0838}]}{\text{ic0838}} \right) + \text{ep1018} \cdot \left(\frac{[\text{s_1018}]}{\text{ic1018}} \right) + \text{ep1020} \cdot \left(\frac{[\text{s_1020}]}{\text{ic1020}} \right) + \text{ep0859} \cdot \left(\frac{[\text{s_0859}]}{\text{ic0859}} \right) + \text{ep1017} \cdot \left(\frac{[\text{s_1017}]}{\text{ic1017}} \right) + \text{ep1022} \cdot \left(\frac{[\text{s_1022}]}{\text{ic1022}} \right) \right) \quad (425)$$

Table 853: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.60143508877284 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.60143508877284 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0838			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1018			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1020			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1017			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep1022			-1.000	dimensionless	<input checked="" type="checkbox"/>

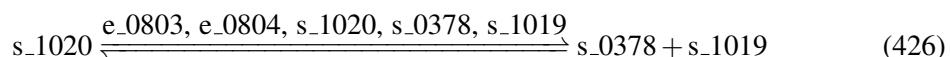
7.213 Reaction r_0799

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name ISC [2Fe-2S] Transfer

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 854: Properties of each reactant.

Id	Name	SBO
s_1020	IscU with bound [2Fe-2S] cluster	

Modifiers

Table 855: Properties of each modifier.

Id	Name	SBO
e_0803	iscA	0000460
e_0804	nifU	0000460
s_1020	IscU with bound [2Fe-2S] cluster	
s_0378	[2Fe-2S] iron-sulfur cluster	
s_1019	IscU scaffold protein	

Products

Table 856: Properties of each product.

Id	Name	SBO
s_0378	[2Fe-2S] iron-sulfur cluster	
s_1019	IscU scaffold protein	

Kinetic Law

Derived unit contains undeclared units

$$v_{213} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep1020} \cdot \left(\frac{[\text{s_1020}]}{\text{ic1020}} \right) + \text{ep0378} \cdot \left(\frac{[\text{s_0378}]}{\text{ic0378}} \right) + \text{ep1019} \cdot \left(\frac{[\text{s_1019}]}{\text{ic1019}} \right) \right) \quad (427)$$

Table 857: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.87846855703637 \cdot 10^{-6}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.87846855703637 \cdot 10^{-6}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1020			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0378			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1019			-1.000	dimensionless	<input checked="" type="checkbox"/>

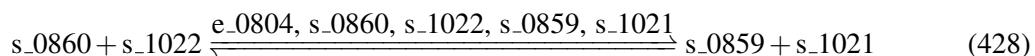
7.214 Reaction r_0800

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name ISC [4Fe-4S] Reduction

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 858: Properties of each reactant.

Id	Name	SBO
s_0860	Flavin adenine dinucleotide reduced	
s_1022	IscU with two bound [2Fe-2S] clusters	

Modifiers

Table 859: Properties of each modifier.

Id	Name	SBO
e_0804	nifU	0000460
s_0860	Flavin adenine dinucleotide reduced	

Id	Name	SBO
s_1022	IscU with two bound [2Fe-2S] clusters	
s_0859	Flavin adenine dinucleotide oxidized	
s_1021	IscU with bound [4Fe-4S] cluster	

Products

Table 860: Properties of each product.

Id	Name	SBO
s_0859	Flavin adenine dinucleotide oxidized	
s_1021	IscU with bound [4Fe-4S] cluster	

Kinetic Law

Derived unit contains undeclared units

$$v_{214} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0860} \cdot \left(\frac{[\text{s}_0860]}{\text{ic0860}} \right) + \text{ep1022} \cdot \left(\frac{[\text{s}_1022]}{\text{ic1022}} \right) + \text{ep0859} \cdot \left(\frac{[\text{s}_0859]}{\text{ic0859}} \right) + \text{ep1021} \cdot \left(\frac{[\text{s}_1021]}{\text{ic1021}} \right) \right) \quad (429)$$

Table 861: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.60143508877284 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.60143508877284 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0860			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1022			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0859			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1021			-1.000	dimensionless	<input checked="" type="checkbox"/>

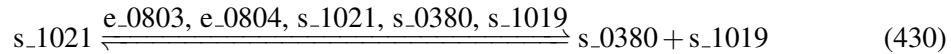
7.215 Reaction r_0801

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name ISC [4Fe-4S] Transfer

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 862: Properties of each reactant.

Id	Name	SBO
s_1021	IscU with bound [4Fe-4S] cluster	

Modifiers

Table 863: Properties of each modifier.

Id	Name	SBO
e_0803	iscA	0000460
e_0804	nifU	0000460
s_1021	IscU with bound [4Fe-4S] cluster	
s_0380	[4Fe-4S] iron-sulfur cluster	
s_1019	IscU scaffold protein	

Products

Table 864: Properties of each product.

Id	Name	SBO
s_0380	[4Fe-4S] iron-sulfur cluster	
s_1019	IscU scaffold protein	

Kinetic Law

Derived unit contains undeclared units

$$v_{215} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1021} \cdot \left(\frac{[s_{_1021}]}{\text{ic1021}} \right) + \text{ep0380} \cdot \left(\frac{[s_{_0380}]}{\text{ic0380}} \right) + \text{ep1019} \cdot \left(\frac{[s_{_1019}]}{\text{ic1019}} \right) \right) \quad (431)$$

Table 865: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.60143508877284 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.60143508877284 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1021			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0380			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1019			-1.000	dimensionless	<input checked="" type="checkbox"/>

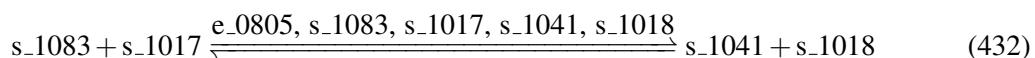
7.216 Reaction r_0802

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name ISC Cysteine desulfurization

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 866: Properties of each reactant.

Id	Name	SBO
s_1083	L-Cysteine	
s_1017	IscS sulfur acceptor protein	

Modifiers

Table 867: Properties of each modifier.

Id	Name	SBO
e_0805	iscS	0000460
s_1083	L-Cysteine	
s_1017	IscS sulfur acceptor protein	
s_1041	L-Alanine	
s_1018	IscS with bound sulfur	

Products

Table 868: Properties of each product.

Id	Name	SBO
s_1041	L-Alanine	
s_1018	IscS with bound sulfur	

Kinetic Law

Derived unit contains undeclared units

$$v_{216} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1083} \cdot \left(\frac{[\text{s_1083}]}{\text{ic1083}} \right) + \text{ep1017} \cdot \left(\frac{[\text{s_1017}]}{\text{ic1017}} \right) + \text{ep1041} \cdot \left(\frac{[\text{s_1041}]}{\text{ic1041}} \right) + \text{ep1018} \cdot \left(\frac{[\text{s_1018}]}{\text{ic1018}} \right) \right) \quad (433)$$

Table 869: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.50022705200688 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.50022705200688 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1083			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1017			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1041			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1018			-1.000	dimensionless	<input checked="" type="checkbox"/>

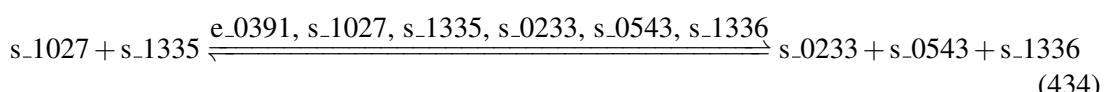
7.217 Reaction r_0806

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name isocitrate dehydrogenase (NADP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 870: Properties of each reactant.

Id	Name	SBO
s_1027	Isocitrate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Modifiers

Table 871: Properties of each modifier.

Id	Name	SBO
e_0391	icd	0000460
s_1027	Isocitrate	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0233	2-Oxoglutarate	
s_0543	CO2	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Products

Table 872: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_0543	CO2	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{217} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1027} \cdot \left(\frac{[\text{s}_1027]}{\text{ic1027}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s}_1335]}{\text{ic1335}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s}_0233]}{\text{ic0233}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s}_0543]}{\text{ic0543}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s}_1336]}{\text{ic1336}} \right) \right) \quad (435)$$

Table 873: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.149	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			0.149	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1027			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			-1.000	dimensionless	<input checked="" type="checkbox"/>

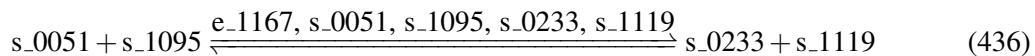
7.218 Reaction r_0808

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name isoleucine transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 874: Properties of each reactant.

Id	Name	SBO
s_0051	(S)-3-Methyl-2-oxopentanoate	
s_1095	L-Glutamate	

Modifiers

Table 875: Properties of each modifier.

Id	Name	SBO
e_1167	ilvE	0000460
s_0051	(S)-3-Methyl-2-oxopentanoate	
s_1095	L-Glutamate	
s_0233	2-Oxoglutarate	
s_1119	L-Isoleucine	

Products

Table 876: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1119	L-Isoleucine	

Kinetic Law

Derived unit contains undeclared units

$$v_{218} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0051 \cdot \left(\frac{[\text{s_0051}]}{\text{ic}0051} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s_1095}]}{\text{ic}1095} \right) + \text{ep}0233 \cdot \left(\frac{[\text{s_0233}]}{\text{ic}0233} \right) + \text{ep}1119 \cdot \left(\frac{[\text{s_1119}]}{\text{ic}1119} \right) \right) \quad (437)$$

Table 877: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0051			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1119			-1.000	dimensionless	<input checked="" type="checkbox"/>

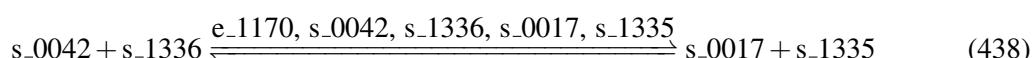
7.219 Reaction r_0811

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name ketol-acid reductoisomerase (2,3-dihydroxy-3-methylbutanoate)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 878: Properties of each reactant.

Id	Name	SBO
s_0042	(S)-2-Acetolactate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 879: Properties of each modifier.

Id	Name	SBO
e_1170	ilvC	0000460
s_0042	(S)-2-Acetolactate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0017	(R)-2,3-Dihydroxy-3-methylbutanoate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 880: Properties of each product.

Id	Name	SBO
s_0017	(R)-2,3-Dihydroxy-3-methylbutanoate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{219} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0042 \cdot \left(\frac{[\text{s}_0042]}{\text{ic}0042} \right) + \text{ep}1336 \cdot \left(\frac{[\text{s}_1336]}{\text{ic}1336} \right) + \text{ep}0017 \cdot \left(\frac{[\text{s}_0017]}{\text{ic}0017} \right) + \text{ep}1335 \cdot \left(\frac{[\text{s}_1335]}{\text{ic}1335} \right) \right) \quad (439)$$

Table 881: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.121	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.121	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0042			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0017			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

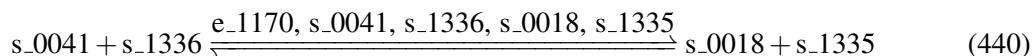
7.220 Reaction r_0812

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name ketol-acid reductoisomerase (2-Acetolactate)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 882: Properties of each reactant.

Id	Name	SBO
s_0041	(S)-2-Aceto-2-hydroxybutanoate	
s_1336	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 883: Properties of each modifier.

Id	Name	SBO
e_1170	ilvC	0000460
s_0041	(S)-2-Aceto-2-hydroxybutanoate	
s_1336	Nicotinamide adenine dinucleotide - reduced	
s_0018	(R)-2,3-Dihydroxy-3-methylpentanoate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 884: Properties of each product.

Id	Name	SBO
s_0018	(R)-2,3-Dihydroxy-3-methylpentanoate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{220} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0041 \cdot \left(\frac{[\text{s_0041}]}{\text{ic}0041} \right) + \text{ep}1336 \cdot \left(\frac{[\text{s_1336}]}{\text{ic}1336} \right) + \text{ep}0018 \cdot \left(\frac{[\text{s_0018}]}{\text{ic}0018} \right) + \text{ep}1335 \cdot \left(\frac{[\text{s_1335}]}{\text{ic}1335} \right) \right) \quad (441)$$

Table 885: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0041			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0018			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

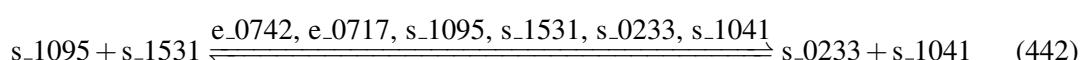
7.221 Reaction r_0815

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name L-alanine transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 886: Properties of each reactant.

Id	Name	SBO
s_1095	L-Glutamate	
s_1531	Pyruvate	

Modifiers

Table 887: Properties of each modifier.

Id	Name	SBO
e_0742	yfdZ	0000460
e_0717	yfbQ	0000460
s_1095	L-Glutamate	
s_1531	Pyruvate	
s_0233	2-Oxoglutarate	
s_1041	L-Alanine	

Products

Table 888: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1041	L-Alanine	

Kinetic Law

Derived unit contains undeclared units

$$v_{221} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1095} \cdot \left(\frac{[\text{s}_1095]}{\text{ic1095}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s}_1531]}{\text{ic1531}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s}_0233]}{\text{ic0233}} \right) + \text{ep1041} \cdot \left(\frac{[\text{s}_1041]}{\text{ic1041}} \right) \right) \quad (443)$$

Table 889: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.081	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.081	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1041			-1.000	dimensionless	<input checked="" type="checkbox"/>

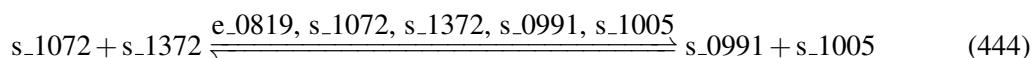
7.222 Reaction r_0829

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name L-aspartate oxidase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 890: Properties of each reactant.

Id	Name	SBO
s_1072	L-Aspartate	
s_1372	O2	

Modifiers

Table 891: Properties of each modifier.

Id	Name	SBO
e_0819	nadB	0000460
s_1072	L-Aspartate	
s_1372	O2	
s_0991	Hydrogen peroxide	
s_1005	Iminoaspartate	

Products

Table 892: Properties of each product.

Id	Name	SBO
s_0991	Hydrogen peroxide	
s_1005	Iminoaspartate	

Kinetic Law

Derived unit contains undeclared units

$$v_{222} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}1072 \cdot \left(\frac{[\text{s_1072}]}{\text{ic1072}} \right) + \text{ep}1372 \cdot \left(\frac{[\text{s_1372}]}{\text{ic1372}} \right) + \text{ep}0991 \cdot \left(\frac{[\text{s_0991}]}{\text{ic0991}} \right) + \text{ep}1005 \cdot \left(\frac{[\text{s_1005}]}{\text{ic1005}} \right) \right) \quad (445)$$

Table 893: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.15541120488056 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.15541120488056 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1072			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1372			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0991			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1005			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.223 Reaction r_0835

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name L-glutamate 5-semialdehyde dehydratase (spontaneous)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 894: Properties of each reactant.

Id	Name	SBO
s_1100	L-Glutamate 5-semialdehyde	

Modifiers

Table 895: Properties of each modifier.

Id	Name	SBO
s_1100	L-Glutamate 5-semialdehyde	
s_0128	1-Pyrroline-5-carboxylate	

Product

Table 896: Properties of each product.

Id	Name	SBO
s_0128	1-Pyrroline-5-carboxylate	

Kinetic Law

Derived unit contains undeclared units

$$v_{223} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1100} \cdot \left(\frac{[\text{s}_1100]}{\text{ic1100}} \right) + \text{ep0128} \cdot \left(\frac{[\text{s}_0128]}{\text{ic0128}} \right) \right) \quad (447)$$

Table 897: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.031	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.031	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1100			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0128			-1.000	dimensionless	<input checked="" type="checkbox"/>

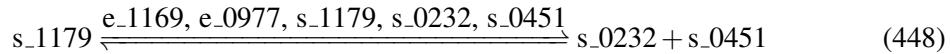
7.224 Reaction r_0847

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name L-threonine deaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 898: Properties of each reactant.

Id	Name	SBO
s_{_1179}	L-Threonine	

Modifiers

Table 899: Properties of each modifier.

Id	Name	SBO
e_{_1169}	ilvA	0000460
e_{_0977}	tdcB	0000460
s_{_1179}	L-Threonine	
s_{_0232}	2-Oxobutanoate	
s_{_0451}	Ammonium	

Products

Table 900: Properties of each product.

Id	Name	SBO
s_{_0232}	2-Oxobutanoate	
s_{_0451}	Ammonium	

Kinetic Law

Derived unit contains undeclared units

$$v_{224} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1179} \cdot \left(\frac{[s_{_1179}]}{\text{ic1179}} \right) + \text{ep0232} \cdot \left(\frac{[s_{_0232}]}{\text{ic0232}} \right) + \text{ep0451} \cdot \left(\frac{[s_{_0451}]}{\text{ic0451}} \right) \right) \quad (449)$$

Table 901: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.040	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1179			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0232			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			-1.000	dimensionless	<input checked="" type="checkbox"/>

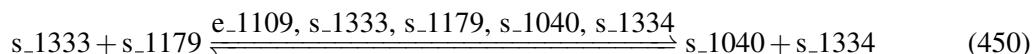
7.225 Reaction r_0848

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name L-threonine dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 902: Properties of each reactant.

Id	Name	SBO
s_{-1333}	Nicotinamide adenine dinucleotide	
s_{-1179}	L-Threonine	

Modifiers

Table 903: Properties of each modifier.

Id	Name	SBO
e_{-1109}	tdh	0000460
s_{-1333}	Nicotinamide adenine dinucleotide	
s_{-1179}	L-Threonine	
s_{-1040}	L-2-Amino-3-oxobutanoate	
s_{-1334}	Nicotinamide adenine dinucleotide - reduced	

Products

Table 904: Properties of each product.

Id	Name	SBO
s_1040	L-2-Amino-3-oxobutanoate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{225} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep1179} \cdot \left(\frac{[\text{s_1179}]}{\text{ic1179}} \right) + \text{ep1040} \cdot \left(\frac{[\text{s_1040}]}{\text{ic1040}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) \right) \quad (451)$$

Table 905: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1179			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1040			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

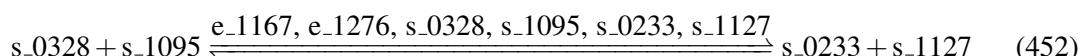
7.226 Reaction r_0854

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name leucine transaminase (irreversible)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 906: Properties of each reactant.

Id	Name	SBO
s_0328	4-Methyl-2-oxopentanoate	
s_1095	L-Glutamate	

Modifiers

Table 907: Properties of each modifier.

Id	Name	SBO
e_1167	ilvE	0000460
e_1276	tyrB	0000460
s_0328	4-Methyl-2-oxopentanoate	
s_1095	L-Glutamate	
s_0233	2-Oxoglutarate	
s_1127	L-Leucine	

Products

Table 908: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1127	L-Leucine	

Kinetic Law

Derived unit contains undeclared units

$$v_{226} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0328 \cdot \left(\frac{[\text{s}_0328]}{\text{ic}0328} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s}_1095]}{\text{ic}1095} \right) + \text{ep}0233 \cdot \left(\frac{[\text{s}_0233]}{\text{ic}0233} \right) + \text{ep}1127 \cdot \left(\frac{[\text{s}_1127]}{\text{ic}1127} \right) \right) \quad (453)$$

Table 909: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0328			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1127			-1.000	dimensionless	<input checked="" type="checkbox"/>

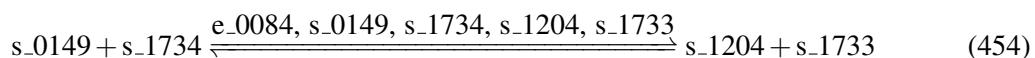
7.227 Reaction r_0857

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Lipid A disaccharide synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 910: Properties of each reactant.

Id	Name	SBO
s_{_0149}	2,3-Bis(3-hydroxytetradecanoyl)-beta-D-glucosaminyl 1-phosphate	
s_{_1734}	UDP-2,3-bis(3-hydroxytetradecanoyl)glucosamine	

Modifiers

Table 911: Properties of each modifier.

Id	Name	SBO
e_{_0084}	lpxB	0000460
s_{_0149}	2,3-Bis(3-hydroxytetradecanoyl)-beta-D-glucosaminyl 1-phosphate	
s_{_1734}	UDP-2,3-bis(3-hydroxytetradecanoyl)glucosamine	
s_{_1204}	Lipid A Disaccharide	
s_{_1733}	UDP	

Products

Table 912: Properties of each product.

Id	Name	SBO
s_1204	Lipid A Disaccharide	
s_1733	UDP	

Kinetic Law

Derived unit contains undeclared units

$$v_{227} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0149 \cdot \left(\frac{[\text{s_0149}]}{\text{ic}0149} \right) + \text{ep}1734 \cdot \left(\frac{[\text{s_1734}]}{\text{ic}1734} \right) + \text{ep}1204 \cdot \left(\frac{[\text{s_1204}]}{\text{ic}1204} \right) + \text{ep}1733 \cdot \left(\frac{[\text{s_1733}]}{\text{ic}1733} \right) \right) \quad (455)$$

Table 913: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0149			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1734			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1204			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1733			-1.000	dimensionless	<input checked="" type="checkbox"/>

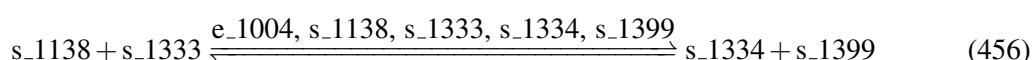
7.228 Reaction r_0925

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name malate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 914: Properties of each reactant.

Id	Name	SBO
s_1138	L-Malate	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 915: Properties of each modifier.

Id	Name	SBO
e_1004	mdh	0000460
s_1138	L-Malate	
s_1333	Nicotinamide adenine dinucleotide	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1399	Oxaloacetate	

Products

Table 916: Properties of each product.

Id	Name	SBO
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1399	Oxaloacetate	

Kinetic Law

Derived unit contains undeclared units

$$v_{228} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1138} \cdot \left(\frac{[\text{s}_1138]}{\text{ic1138}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) + \text{ep1399} \cdot \left(\frac{[\text{s}_1399]}{\text{ic1399}} \right) \right) \quad (457)$$

Table 917: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.143	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.143	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1138			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1399			-1.000	dimensionless	<input checked="" type="checkbox"/>

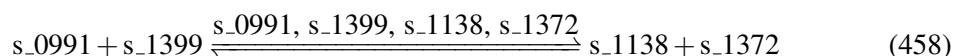
7.229 Reaction r_0928

This is a reversible reaction of two reactants forming two products influenced by four modifiers.

Name malate oxidase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 918: Properties of each reactant.

Id	Name	SBO
s_0991	Hydrogen peroxide	
s_1399	Oxaloacetate	

Modifiers

Table 919: Properties of each modifier.

Id	Name	SBO
s_0991	Hydrogen peroxide	
s_1399	Oxaloacetate	
s_1138	L-Malate	
s_1372	O2	

Products

Table 920: Properties of each product.

Id	Name	SBO
s_1138	L-Malate	

Id	Name	SBO
s_1372	O2	

Kinetic Law

Derived unit contains undeclared units

$$v_{229} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0991} \cdot \left(\frac{[\text{s_0991}]}{\text{ic0991}} \right) + \text{ep1399} \cdot \left(\frac{[\text{s_1399}]}{\text{ic1399}} \right) + \text{ep1138} \cdot \left(\frac{[\text{s_1138}]}{\text{ic1138}} \right) + \text{ep1372} \cdot \left(\frac{[\text{s_1372}]}{\text{ic1372}} \right) \right) \quad (459)$$

Table 921: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.15541120779209 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.15541120779209 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0991			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1399			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1138			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1372			-1.000	dimensionless	<input checked="" type="checkbox"/>

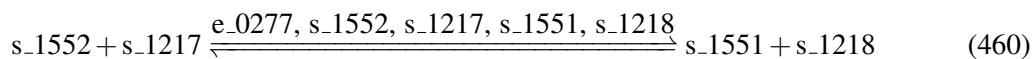
7.230 Reaction r_0934

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Malonyl-CoA methyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 922: Properties of each reactant.

Id	Name	SBO
s_1552	S-Adenosyl-L-methionine	
s_1217	Malonyl-CoA	

Modifiers

Table 923: Properties of each modifier.

Id	Name	SBO
e_0277	bioC	0000460
s_1552	S-Adenosyl-L-methionine	
s_1217	Malonyl-CoA	
s_1551	S-Adenosyl-L-homocysteine	
s_1218	malonyl-CoA methyl ester	

Products

Table 924: Properties of each product.

Id	Name	SBO
s_1551	S-Adenosyl-L-homocysteine	
s_1218	malonyl-CoA methyl ester	

Kinetic Law

Derived unit contains undeclared units

$$v_{230} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1552} \cdot \left(\frac{[\text{s_1552}]}{\text{ic1552}} \right) + \text{ep1217} \cdot \left(\frac{[\text{s_1217}]}{\text{ic1217}} \right) + \text{ep1551} \cdot \left(\frac{[\text{s_1551}]}{\text{ic1551}} \right) + \text{ep1218} \cdot \left(\frac{[\text{s_1218}]}{\text{ic1218}} \right) \right) \quad (461)$$

Table 925: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1552			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1217			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1551			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1218			-1.000	dimensionless	<input checked="" type="checkbox"/>

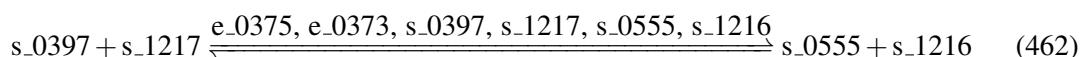
7.231 Reaction r_0935

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name Malonyl-CoA-ACP transacylase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 926: Properties of each reactant.

Id	Name	SBO
s_0397	acyl carrier protein	
s_1217	Malonyl-CoA	

Modifiers

Table 927: Properties of each modifier.

Id	Name	SBO
e_0375	acpP	0000460
e_0373	fabD	0000460
s_0397	acyl carrier protein	
s_1217	Malonyl-CoA	
s_0555	Coenzyme A	
s_1216	Malonyl-[acyl-carrier protein]	

Products

Table 928: Properties of each product.

Id	Name	SBO
s_0555	Coenzyme A	
s_1216	Malonyl-[acyl-carrier protein]	

Kinetic Law

Derived unit contains undeclared units

$$v_{231} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0397} \cdot \left(\frac{[\text{s_0397}]}{\text{ic0397}} \right) + \text{ep1217} \cdot \left(\frac{[\text{s_1217}]}{\text{ic1217}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) + \text{ep1216} \cdot \left(\frac{[\text{s_1216}]}{\text{ic1216}} \right) \right) \quad (463)$$

Table 929: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0397			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1217			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1216			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.232 Reaction r_0950

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name methenyltetrahydrofolate cyclohydrolase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 930: Properties of each reactant.

Id	Name	SBO
s_0335	5,10-Methenyltetrahydrofolate	

Modifiers

Table 931: Properties of each modifier.

Id	Name	SBO
e_0188	fold	0000460
s_0335	5,10-Methenyltetrahydrofolate	
s_0133	10-Formyltetrahydrofolate	

Product

Table 932: Properties of each product.

Id	Name	SBO
s_0133	10-Formyltetrahydrofolate	

Kinetic Law

Derived unit contains undeclared units

$$v_{232} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0335 \cdot \left(\frac{[\text{s}_0335]}{\text{ic}0335} \right) + \text{ep}0133 \cdot \left(\frac{[\text{s}_0133]}{\text{ic}0133} \right) \right) \quad (465)$$

Table 933: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.038	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.038	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0335			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0133			-1.000	dimensionless	<input checked="" type="checkbox"/>

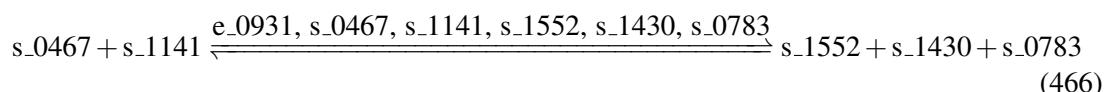
7.233 Reaction r_0951

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name methionine adenosyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 934: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1141	L-Methionine	

Modifiers

Table 935: Properties of each modifier.

Id	Name	SBO
e_0931	metK	0000460
s_0467	ATP	
s_1141	L-Methionine	
s_1552	S-Adenosyl-L-methionine	
s_1430	Phosphate	
s_0783	Diphosphate	

Products

Table 936: Properties of each product.

Id	Name	SBO
s_1552	S-Adenosyl-L-methionine	
s_1430	Phosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{233} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1141} \cdot \left(\frac{[\text{s_1141}]}{\text{ic1141}} \right) + \text{ep1552} \cdot \left(\frac{[\text{s_1552}]}{\text{ic1552}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (467)$$

Table 937: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$1.24388027294171 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$1.24388027294171 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1141			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1552			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

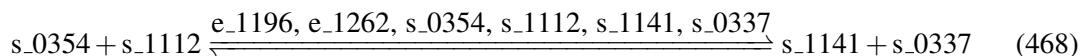
7.234 Reaction r_0954

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name methionine synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 938: Properties of each reactant.

Id	Name	SBO
s_0354	5-Methyltetrahydrofolate	
s_1112	L-Homocysteine	

Modifiers

Table 939: Properties of each modifier.

Id	Name	SBO
e_1196	metE	0000460
e_1262	metH	0000460
s_0354	5-Methyltetrahydrofolate	
s_1112	L-Homocysteine	
s_1141	L-Methionine	
s_0337	5,6,7,8-Tetrahydrofolate	

Products

Table 940: Properties of each product.

Id	Name	SBO
s_1141	L-Methionine	
s_0337	5,6,7,8-Tetrahydrofolate	

Kinetic Law

Derived unit contains undeclared units

$$v_{234} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0354} \cdot \left(\frac{[\text{s_0354}]}{\text{ic0354}} \right) + \text{ep1112} \cdot \left(\frac{[\text{s_1112}]}{\text{ic1112}} \right) + \text{ep1141} \cdot \left(\frac{[\text{s_1141}]}{\text{ic1141}} \right) + \text{ep0337} \cdot \left(\frac{[\text{s_0337}]}{\text{ic0337}} \right) \right) \quad (469)$$

Table 941: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0354			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1112			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1141			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0337			-1.000	dimensionless	<input checked="" type="checkbox"/>

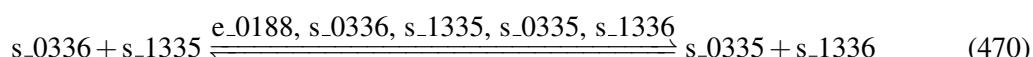
7.235 Reaction r_0957

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name methylenetetrahydrofolate dehydrogenase (NADP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 942: Properties of each reactant.

Id	Name	SBO
s_0336	5,10-Methylenetetrahydrofolate	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Modifiers

Table 943: Properties of each modifier.

Id	Name	SBO
e_0188	fold	0000460
s_0336	5,10-Methylenetetrahydrofolate	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0335	5,10-Methenyltetrahydrofolate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Products

Table 944: Properties of each product.

Id	Name	SBO
s_0335	5,10-Methenyltetrahydrofolate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{235} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0336} \cdot \left(\frac{[\text{s}_0336]}{\text{ic0336}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s}_1335]}{\text{ic1335}} \right) + \text{ep0335} \cdot \left(\frac{[\text{s}_0335]}{\text{ic0335}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s}_1336]}{\text{ic1336}} \right) \right) \quad (471)$$

Table 945: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.038	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.038	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0336			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1335			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			-1.000	dimensionless	<input checked="" type="checkbox"/>

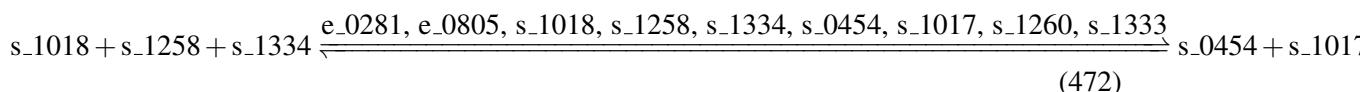
7.236 Reaction r_0963

This is a reversible reaction of three reactants forming four products influenced by nine modifiers.

Name MoaD sulfuration (nadh, assumed)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 946: Properties of each reactant.

Id	Name	SBO
s_1018	IscS with bound sulfur	
s_1258	MoaD Protein with bound AMP	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 947: Properties of each modifier.

Id	Name	SBO
e_0281	moaD	0000460
e_0805	iscS	0000460
s_1018	IscS with bound sulfur	
s_1258	MoaD Protein with bound AMP	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0454	AMP	
s_1017	IscS sulfur acceptor protein	
s_1260	MoaD Protein with thiocarboxylate	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 948: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_1017	IscS sulfur acceptor protein	
s_1260	MoaD Protein with thiocarboxylate	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{236} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep1018} \cdot \left(\frac{[\text{s_1018}]}{\text{ic1018}} \right) + \text{ep1258} \cdot \left(\frac{[\text{s_1258}]}{\text{ic1258}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep1017} \cdot \left(\frac{[\text{s_1017}]}{\text{ic1017}} \right) + \text{ep1260} \cdot \left(\frac{[\text{s_1260}]}{\text{ic1260}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) \right) \quad (473)$$

Table 949: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.75961662815825 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.75961662815825 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1018			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1258			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1017			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1260			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

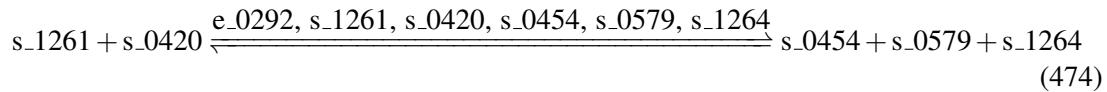
7.237 Reaction r_0964

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name molybdenum cofactor synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 950: Properties of each reactant.

Id	Name	SBO
s_1261	Molybdate	
s_0420	adenylated molybdopterin	

Modifiers

Table 951: Properties of each modifier.

Id	Name	SBO
e_0292	moeA	0000460
s_1261	Molybdate	
s_0420	adenylated molybdopterin	
s_0454	AMP	
s_0579	Cu2+	
s_1264	molybdenum cofactor	

Products

Table 952: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_0579	Cu2+	
s_1264	molybdenum cofactor	

Kinetic Law

Derived unit contains undeclared units

$$v_{237} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1261} \cdot \left(\frac{[\text{s_1261}]}{\text{ic1261}} \right) + \text{ep0420} \cdot \left(\frac{[\text{s_0420}]}{\text{ic0420}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep0579} \cdot \left(\frac{[\text{s_0579}]}{\text{ic0579}} \right) + \text{ep1264} \cdot \left(\frac{[\text{s_1264}]}{\text{ic1264}} \right) \right) \quad (475)$$

Table 953: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$1.68990415703956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$1.68990415703956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1261			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0420			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0579			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1264			-1.000	dimensionless	<input checked="" type="checkbox"/>

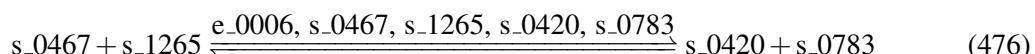
7.238 Reaction r_0965

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name molybdopterin adenylyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 954: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1265	molybdopterin	

Modifiers

Table 955: Properties of each modifier.

Id	Name	SBO
e_0006	mog	0000460
s_0467	ATP	
s_1265	molybdopterin	
s_0420	adenylated molybdopterin	
s_0783	Diphosphate	

Products

Table 956: Properties of each product.

Id	Name	SBO
s_0420	adenylated molybdopterin	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{238} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep1265} \cdot \left(\frac{[\text{s}_1265]}{\text{ic1265}} \right) + \text{ep0420} \cdot \left(\frac{[\text{s}_0420]}{\text{ic0420}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (477)$$

Table 957: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.37980831407913 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.37980831407913 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1265			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0420			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

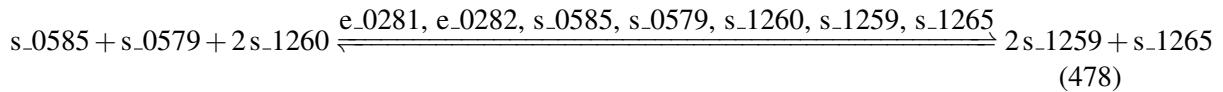
7.239 Reaction r_0968

This is a reversible reaction of three reactants forming two products influenced by seven modifiers.

Name molybdopterin synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 958: Properties of each reactant.

Id	Name	SBO
s_0585	cyclic pyranopterin monophosphate	
s_0579	Cu2+	
s_1260	MoaD Protein with thiocarboxylate	

Modifiers

Table 959: Properties of each modifier.

Id	Name	SBO
e_0281	moaD	0000460
e_0282	moaE	0000460
s_0585	cyclic pyranopterin monophosphate	
s_0579	Cu2+	
s_1260	MoaD Protein with thiocarboxylate	
s_1259	MoaD Protein with carboxylate	
s_1265	molybdopterin	

Products

Table 960: Properties of each product.

Id	Name	SBO
s_1259	MoaD Protein with carboxylate	
s_1265	molybdopterin	

Kinetic Law

Derived unit contains undeclared units

$$v_{239} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0585 \cdot \left(\frac{[\text{s_0585}]}{\text{ic}0585} \right) + \text{ep}0579 \cdot \left(\frac{[\text{s_0579}]}{\text{ic}0579} \right) + \text{ep}1260 \cdot \left(\frac{[\text{s_1260}]}{\text{ic}1260} \right) + \text{ep}1259 \cdot \left(\frac{[\text{s_1259}]}{\text{ic}1259} \right) + \text{ep}1265 \cdot \left(\frac{[\text{s_1265}]}{\text{ic}1265} \right) \right) \quad (479)$$

Table 961: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.37980831407913 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.37980831407913 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0585			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0579			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1260			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1259			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep1265			-1.000	dimensionless	<input checked="" type="checkbox"/>

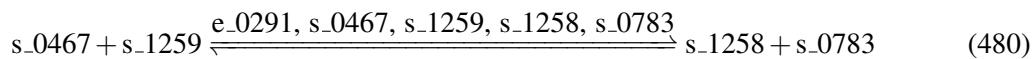
7.240 Reaction r_0969

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name molybdopterin synthase sulfurylase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 962: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1259	MoaD Protein with carboxylate	

Modifiers

Table 963: Properties of each modifier.

Id	Name	SBO
e_0291	moeB	0000460
s_0467	ATP	
s_1259	MoaD Protein with carboxylate	
s_1258	MoaD Protein with bound AMP	
s_0783	Diphosphate	

Products

Table 964: Properties of each product.

Id	Name	SBO
s_1258	MoaD Protein with bound AMP	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{240} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep1259} \cdot \left(\frac{[\text{s}_1259]}{\text{ic1259}} \right) + \text{ep1258} \cdot \left(\frac{[\text{s}_1258]}{\text{ic1258}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (481)$$

Table 965: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.75961662815825 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.75961662815825 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1259			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1258			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

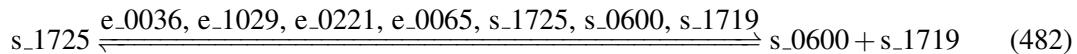
7.241 Reaction r_0970

This is a reversible reaction of one reactant forming two products influenced by seven modifiers.

Name murein crosslinking transpeptidase 1A:(A2pm->D-ala) (periplasm)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 966: Properties of each reactant.

Id	Name	SBO
s_1725	two linked disacharide pentapeptide murein units (uncrosslinked, middle of chain)	

Modifiers

Table 967: Properties of each modifier.

Id	Name
e_0036	ftsI
e_1029	mrcA
e_0221	mrdA
e_0065	mrcB
s_1725	two linked disacharide pentapeptide murein units (uncrosslinked, middle of chain)
s_0600	D-Alanine
s_1719	two disacharide linked murein units, pentapeptide crosslinked tetrapeptide (A2pm->D-ala) (middle of ch)

Products

Table 968: Properties of each product.

Id	Name
s_0600	D-Alanine
s_1719	two disacharide linked murein units, pentapeptide crosslinked tetrapeptide (A2pm->D-ala) (middle of ch)

Kinetic Law

Derived unit contains undeclared units

$$v_{241} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1725} \cdot \left(\frac{[s_{1725}]}{\text{ic1725}} \right) + \text{ep0600} \cdot \left(\frac{[s_{0600}]}{\text{ic0600}} \right) + \text{ep1719} \cdot \left(\frac{[s_{1719}]}{\text{ic1719}} \right) \right) \quad (483)$$

Table 969: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.002	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.002	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1725			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0600			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1719			-1.000	dimensionless	<input checked="" type="checkbox"/>

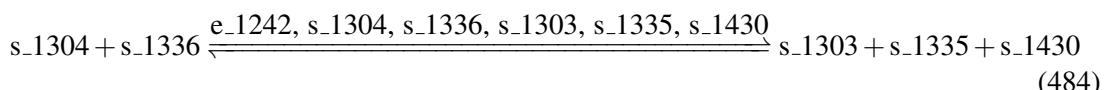
7.242 Reaction r_0996

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name N-acetyl-g-glutamyl-phosphate reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 970: Properties of each reactant.

Id	Name	SBO
s_1304	N-Acetyl-L-glutamyl 5-phosphate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 971: Properties of each modifier.

Id	Name	SBO
e_1242	argC	0000460
s_1304	N-Acetyl-L-glutamyl 5-phosphate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1303	N-Acetyl-L-glutamate 5-semialdehyde	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1430	Phosphate	

Products

Table 972: Properties of each product.

Id	Name	SBO
s_1303	N-Acetyl-L-glutamate 5-semialdehyde	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{242} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1304} \cdot \left(\frac{[\text{s_1304}]}{\text{ic1304}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep1303} \cdot \left(\frac{[\text{s_1303}]}{\text{ic1303}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (485)$$

Table 973: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1304			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1303			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

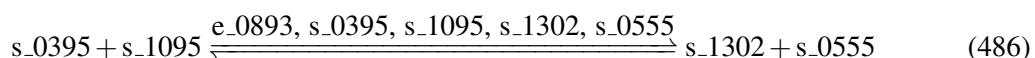
7.243 Reaction r_0999

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name N-acetylglutamate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 974: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_1095	L-Glutamate	

Modifiers

Table 975: Properties of each modifier.

Id	Name	SBO
e_0893	argA	0000460
s_0395	Acetyl-CoA	
s_1095	L-Glutamate	
s_1302	N-Acetyl-L-glutamate	
s_0555	Coenzyme A	

Products

Table 976: Properties of each product.

Id	Name	SBO
s_1302	N-Acetyl-L-glutamate	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{243} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0395 \cdot \left(\frac{[\text{s_0395}]}{\text{ic}0395} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s_1095}]}{\text{ic}1095} \right) + \text{ep}1302 \cdot \left(\frac{[\text{s_1302}]}{\text{ic}1302} \right) + \text{ep}0555 \cdot \left(\frac{[\text{s_0555}]}{\text{ic}0555} \right) \right) \quad (487)$$

Table 977: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1302			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

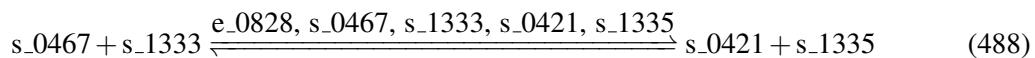
7.244 Reaction r_1006

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name NAD kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 978: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 979: Properties of each modifier.

Id	Name	SBO
e_0828	ppnK	0000460
s_0467	ATP	
s_1333	Nicotinamide adenine dinucleotide	
s_0421	ADP	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 980: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{244} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) \right) \quad (489)$$

Table 981: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.1916980210075 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.1916980210075 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

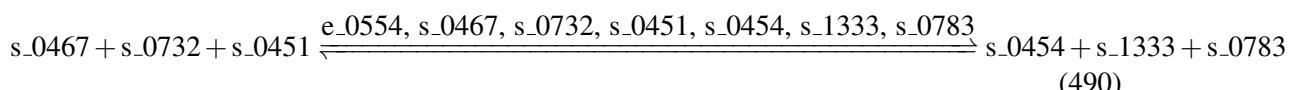
7.245 Reaction r_1008

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name NAD synthase (nh3)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 982: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0732	Deamino-NAD+	
s_0451	Ammonium	

Modifiers

Table 983: Properties of each modifier.

Id	Name	SBO
e_0554	nadE	0000460
s_0467	ATP	
s_0732	Deamino-NAD+	
s_0451	Ammonium	
s_0454	AMP	
s_1333	Nicotinamide adenine dinucleotide	
s_0783	Diphosphate	

Products

Table 984: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_1333	Nicotinamide adenine dinucleotide	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{245} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s}_0467]}{\text{ic}0467} \right) + \text{ep}0732 \cdot \left(\frac{[\text{s}_0732]}{\text{ic}0732} \right) + \text{ep}0451 \cdot \left(\frac{[\text{s}_0451]}{\text{ic}0451} \right) + \text{ep}0454 \cdot \left(\frac{[\text{s}_0454]}{\text{ic}0454} \right) + \text{ep}1333 \cdot \left(\frac{[\text{s}_1333]}{\text{ic}1333} \right) + \text{ep}0783 \cdot \left(\frac{[\text{s}_0783]}{\text{ic}0783} \right) \right) \quad (491)$$

Table 985: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.15541120476312 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.15541120476312 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0732			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

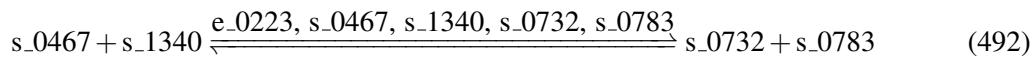
7.246 Reaction r_1019

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name nicotinate-nucleotide adenylyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 986: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1340	Nicotinate D-ribonucleotide	

Modifiers

Table 987: Properties of each modifier.

Id	Name	SBO
e_0223	nadD	0000460
s_0467	ATP	
s_1340	Nicotinate D-ribonucleotide	
s_0732	Deamino-NAD+	
s_0783	Diphosphate	

Products

Table 988: Properties of each product.

Id	Name	SBO
s_0732	Deamino-NAD+	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{246} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1340} \cdot \left(\frac{[\text{s_1340}]}{\text{ic1340}} \right) + \text{ep0732} \cdot \left(\frac{[\text{s_0732}]}{\text{ic0732}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (493)$$

Table 989: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.15541120469206 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.15541120469206 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1340			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0732			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

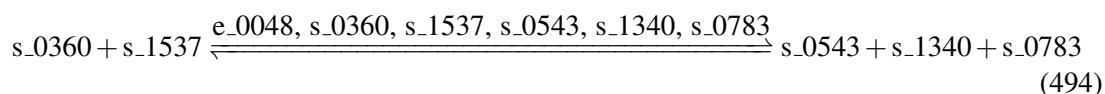
7.247 Reaction r_1021

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name nicotinate-nucleotide diphosphorylase (carboxylating)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 990: Properties of each reactant.

Id	Name	SBO
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	
s_1537	Quinolinate	

Modifiers

Table 991: Properties of each modifier.

Id	Name	SBO
e_0048	nadC	0000460
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	
s_1537	Quinolinate	
s_0543	CO2	
s_1340	Nicotinate D-ribonucleotide	
s_0783	Diphosphate	

Products

Table 992: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_1340	Nicotinate D-ribonucleotide	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{247} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0360} \cdot \left(\frac{[\text{s}_0360]}{\text{ic0360}} \right) + \text{ep1537} \cdot \left(\frac{[\text{s}_1537]}{\text{ic1537}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s}_0543]}{\text{ic0543}} \right) + \text{ep1340} \cdot \left(\frac{[\text{s}_1340]}{\text{ic1340}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (495)$$

Table 993: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			3.15541120467916 · 10 ⁻⁴	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			$3.15541120467916 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0360			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1537			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1340			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

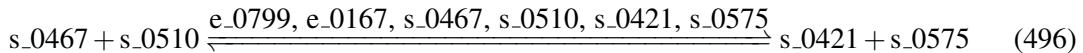
7.248 Reaction r_1039

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name nucleoside-diphosphate kinase (ATP:CDP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 994: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0510	CDP	

Modifiers

Table 995: Properties of each modifier.

Id	Name	SBO
e_0799	ndk	0000460
e_0167	adk	0000460
s_0467	ATP	
s_0510	CDP	
s_0421	ADP	
s_0575	CTP	

Products

Table 996: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0575	CTP	

Kinetic Law

Derived unit contains undeclared units

$$v_{248} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0510} \cdot \left(\frac{[\text{s_0510}]}{\text{ic0510}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0575} \cdot \left(\frac{[\text{s_0575}]}{\text{ic0575}} \right) \right) \quad (497)$$

Table 997: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.025	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.025	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0510			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0575			-1.000	dimensionless	<input checked="" type="checkbox"/>

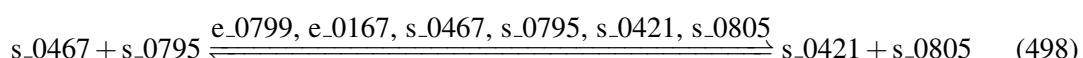
7.249 Reaction r_1043

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name nucleoside-diphosphate kinase (ATP:dTDP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 998: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0795	dTDP	

Modifiers

Table 999: Properties of each modifier.

Id	Name	SBO
e_0799	ndk	0000460
e_0167	adk	0000460
s_0467	ATP	
s_0795	dTDP	
s_0421	ADP	
s_0805	dTTP	

Products

Table 1000: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0805	dTTP	

Kinetic Law

Derived unit contains undeclared units

$$v_{249} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0795} \cdot \left(\frac{[\text{s}_0795]}{\text{ic0795}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep0805} \cdot \left(\frac{[\text{s}_0805]}{\text{ic0805}} \right) \right) \quad (499)$$

Table 1001: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0795			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0805			-1.000	dimensionless	<input checked="" type="checkbox"/>

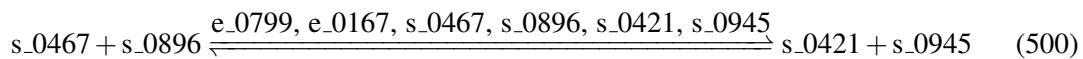
7.250 Reaction r_1045

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name nucleoside-diphosphate kinase (ATP:GDP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1002: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0896	GDP	

Modifiers

Table 1003: Properties of each modifier.

Id	Name	SBO
e_0799	ndk	0000460
e_0167	adk	0000460
s_0467	ATP	
s_0896	GDP	
s_0421	ADP	
s_0945	GTP	

Products

Table 1004: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0945	GTP	

Kinetic Law

Derived unit contains undeclared units

$$v_{250} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0896} \cdot \left(\frac{[\text{s_0896}]}{\text{ic0896}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0945} \cdot \left(\frac{[\text{s_0945}]}{\text{ic0945}} \right) \right) \quad (501)$$

Table 1005: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.109	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.109	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0896			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0945			-1.000	dimensionless	<input checked="" type="checkbox"/>

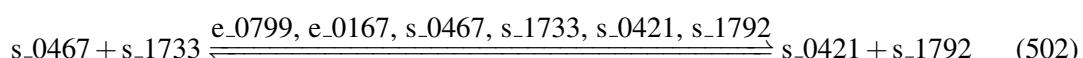
7.251 Reaction r_1046

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name nucleoside-diphosphate kinase (ATP:UDP)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1006: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1733	UDP	

Modifiers

Table 1007: Properties of each modifier.

Id	Name	SBO
e_0799	ndk	0000460
e_0167	adk	0000460
s_0467	ATP	
s_1733	UDP	
s_0421	ADP	
s_1792	UTP	

Products

Table 1008: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1792	UTP	

Kinetic Law

Derived unit contains undeclared units

$$v_{251} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s}_0467]}{\text{ic}0467} \right) + \text{ep}1733 \cdot \left(\frac{[\text{s}_1733]}{\text{ic}1733} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s}_0421]}{\text{ic}0421} \right) + \text{ep}1792 \cdot \left(\frac{[\text{s}_1792]}{\text{ic}1792} \right) \right) \quad (503)$$

Table 1009: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.059	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.059	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1733			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1792			-1.000	dimensionless	<input checked="" type="checkbox"/>

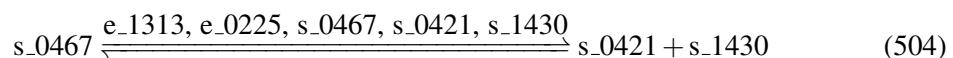
7.252 Reaction r_1047

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name nucleoside-triphosphatase (ATP)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1010: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	

Modifiers

Table 1011: Properties of each modifier.

Id	Name	SBO
e_1313	rsgA	0000460
e_0225	hscC	0000460
s_0467	ATP	
s_0421	ADP	
s_1430	Phosphate	

Products

Table 1012: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{252} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s_0467}]}{\text{ic}0467} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s_0421}]}{\text{ic}0421} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic}1430} \right) \right) \quad (505)$$

Table 1013: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			3.150	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			3.150	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

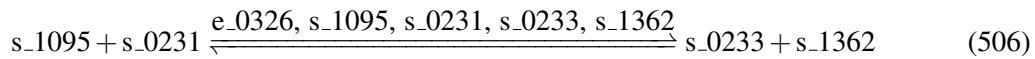
7.253 Reaction r_1054

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name O-Phospho-4-hydroxy-L-threonine:2-oxoglutarate aminotransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1014: Properties of each reactant.

Id	Name	SBO
s_1095	L-Glutamate	

Id	Name	SBO
s_0231	2-Oxo-3-hydroxy-4-phosphobutanoate	

Modifiers

Table 1015: Properties of each modifier.

Id	Name	SBO
e_0326	serC	0000460
s_1095	L-Glutamate	
s_0231	2-Oxo-3-hydroxy-4-phosphobutanoate	
s_0233	2-Oxoglutarate	
s_1362	O-Phospho-4-hydroxy-L-threonine	

Products

Table 1016: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1362	O-Phospho-4-hydroxy-L-threonine	

Kinetic Law

Derived unit contains undeclared units

$$v_{253} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1095} \cdot \left(\frac{[\text{s}_1095]}{\text{ic1095}} \right) + \text{ep0231} \cdot \left(\frac{[\text{s}_0231]}{\text{ic0231}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s}_0233]}{\text{ic0233}} \right) + \text{ep1362} \cdot \left(\frac{[\text{s}_1362]}{\text{ic1362}} \right) \right) \quad (507)$$

Table 1017: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317222495 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317222495 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0231			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1362			-1.000	dimensionless	<input checked="" type="checkbox"/>

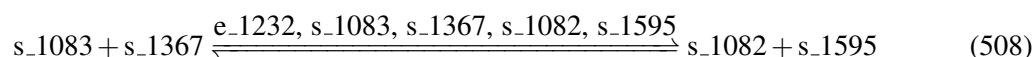
7.254 Reaction r_1057

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name O-succinylhomoserine lyase (L-cysteine)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1018: Properties of each reactant.

Id	Name	SBO
s_1083	L-Cysteine	
s_1367	O-Succinyl-L-homoserine	

Modifiers

Table 1019: Properties of each modifier.

Id	Name	SBO
e_1232	metB	0000460
s_1083	L-Cysteine	
s_1367	O-Succinyl-L-homoserine	
s_1082	L-Cystathionine	
s_1595	Succinate	

Products

Table 1020: Properties of each product.

Id	Name	SBO
s_1082	L-Cystathionine	
s_1595	Succinate	

Kinetic Law

Derived unit contains undeclared units

$$v_{254} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1083} \cdot \left(\frac{[\text{s_1083}]}{\text{ic1083}} \right) + \text{ep1367} \cdot \left(\frac{[\text{s_1367}]}{\text{ic1367}} \right) + \text{ep1082} \cdot \left(\frac{[\text{s_1082}]}{\text{ic1082}} \right) + \text{ep1595} \cdot \left(\frac{[\text{s_1595}]}{\text{ic1595}} \right) \right) \quad (509)$$

Table 1021: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.021	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1083			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1367			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1082			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1595			-1.000	dimensionless	<input checked="" type="checkbox"/>

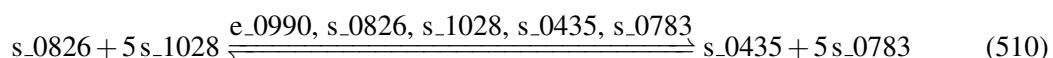
7.255 Reaction r_1063

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Octaprenyl pyrophosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1022: Properties of each reactant.

Id	Name	SBO
s_0826	Farnesyl diphosphate	
s_1028	Isopentenyl diphosphate	

Modifiers

Table 1023: Properties of each modifier.

Id	Name	SBO
e_0990	ispB	0000460
s_0826	Farnesyl diphosphate	
s_1028	Isopentenyl diphosphate	
s_0435	all-trans-Octaprenyl diphosphate	
s_0783	Diphosphate	

Products

Table 1024: Properties of each product.

Id	Name	SBO
s_0435	all-trans-Octaprenyl diphosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{255} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0826} \cdot \left(\frac{[\text{s}_0826]}{\text{ic0826}} \right) + \text{ep1028} \cdot \left(\frac{[\text{s}_1028]}{\text{ic1028}} \right) + \text{ep0435} \cdot \left(\frac{[\text{s}_0435]}{\text{ic0435}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (511)$$

Table 1025: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229362 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229362 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0826			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1028			5.000	dimensionless	<input checked="" type="checkbox"/>
ep0435			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-5.000	dimensionless	<input checked="" type="checkbox"/>

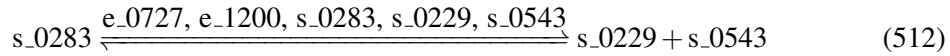
7.256 Reaction r_1064

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name Octaprenyl-hydroxybenzoate decarboxylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1026: Properties of each reactant.

Id	Name	SBO
s_0283	3-Octaprenyl-4-hydroxybenzoate	

Modifiers

Table 1027: Properties of each modifier.

Id	Name	SBO
e_0727	ubiX	0000460
e_1200	ubiD	0000460
s_0283	3-Octaprenyl-4-hydroxybenzoate	
s_0229	2-Octaprenylphenol	
s_0543	CO2	

Products

Table 1028: Properties of each product.

Id	Name	SBO
s_0229	2-Octaprenylphenol	
s_0543	CO2	

Kinetic Law

Derived unit contains undeclared units

$$v_{256} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0283} \cdot \left(\frac{[s_{0283}]}{\text{ic0283}} \right) + \text{ep0229} \cdot \left(\frac{[s_{0229}]}{\text{ic0229}} \right) + \text{ep0543} \cdot \left(\frac{[s_{0543}]}{\text{ic0543}} \right) \right) \quad (513)$$

Table 1029: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0283			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0229			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

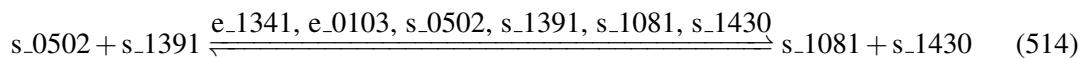
7.257 Reaction r_1065

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name ornithine carbamoyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1030: Properties of each reactant.

Id	Name	SBO
s_{_0502}	Carbamoyl phosphate	
s_{_1391}	Ornithine	

Modifiers

Table 1031: Properties of each modifier.

Id	Name	SBO
e_{_1341}	argI	0000460
e_{_0103}	argF	0000460
s_{_0502}	Carbamoyl phosphate	
s_{_1391}	Ornithine	
s_{_1081}	L-Citrulline	
s_{_1430}	Phosphate	

Products

Table 1032: Properties of each product.

Id	Name	SBO
s_1081	L-Citrulline	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{257} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0502} \cdot \left(\frac{[\text{s_0502}]}{\text{ic0502}} \right) + \text{ep1391} \cdot \left(\frac{[\text{s_1391}]}{\text{ic1391}} \right) + \text{ep1081} \cdot \left(\frac{[\text{s_1081}]}{\text{ic1081}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (515)$$

Table 1033: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0502			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1391			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1081			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

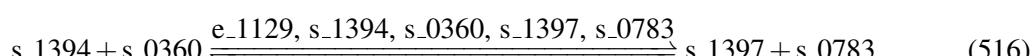
7.258 Reaction r_1067

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name orotate phosphoribosyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1034: Properties of each reactant.

Id	Name	SBO
s_1394	Orotate	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	

Modifiers

Table 1035: Properties of each modifier.

Id	Name	SBO
e_1129	pyrE	0000460
s_1394	Orotate	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	
s_1397	Orotidine 5'-phosphate	
s_0783	Diphosphate	

Products

Table 1036: Properties of each product.

Id	Name	SBO
s_1397	Orotidine 5'-phosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{258} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1394} \cdot \left(\frac{[\text{s}_1394]}{\text{ic1394}} \right) + \text{ep0360} \cdot \left(\frac{[\text{s}_0360]}{\text{ic0360}} \right) + \text{ep1397} \cdot \left(\frac{[\text{s}_1397]}{\text{ic1397}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) \right) \quad (517)$$

Table 1037: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.046	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.046	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1394			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0360			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1397			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

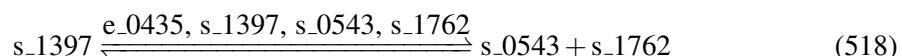
7.259 Reaction r_1068

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name orotidine-5'-phosphate decarboxylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1038: Properties of each reactant.

Id	Name	SBO
s_1397	Orotidine 5'-phosphate	

Modifiers

Table 1039: Properties of each modifier.

Id	Name	SBO
e_0435	pyrF	0000460
s_1397	Orotidine 5'-phosphate	
s_0543	CO2	
s_1762	UMP	

Products

Table 1040: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_1762	UMP	

Kinetic Law

Derived unit contains undeclared units

$$v_{259} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1397} \cdot \left(\frac{[\text{s_1397}]}{\text{ic1397}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1762} \cdot \left(\frac{[\text{s_1762}]}{\text{ic1762}} \right) \right) \quad (519)$$

Table 1041: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.046	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.046	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1397			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1762			-1.000	dimensionless	<input checked="" type="checkbox"/>

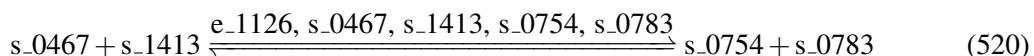
7.260 Reaction r_1074

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name pantetheine-phosphate adenylyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1042: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1413	Pantetheine 4'-phosphate	

Modifiers

Table 1043: Properties of each modifier.

Id	Name	SBO
e_1126	coaD	0000460
s_0467	ATP	
s_1413	Pantetheine 4'-phosphate	
s_0754	Dephospho-CoA	
s_0783	Diphosphate	

Products

Table 1044: Properties of each product.

Id	Name	SBO
s_0754	Dephospho-CoA	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{260} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s}_0467]}{\text{ic}0467} \right) + \text{ep}1413 \cdot \left(\frac{[\text{s}_1413]}{\text{ic}1413} \right) + \text{ep}0754 \cdot \left(\frac{[\text{s}_0754]}{\text{ic}0754} \right) + \text{ep}0783 \cdot \left(\frac{[\text{s}_0783]}{\text{ic}0783} \right) \right) \quad (521)$$

Table 1045: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1413			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0754			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

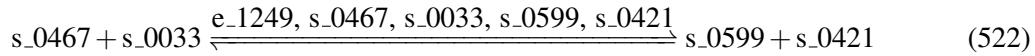
7.261 Reaction r_1075

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name pantothenate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1046: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0033	(R)-Pantothenate	

Modifiers

Table 1047: Properties of each modifier.

Id	Name	SBO
e_1249	coaA	0000460
s_0467	ATP	
s_0033	(R)-Pantothenate	
s_0599	D-4'-Phosphopantothenate	
s_0421	ADP	

Products

Table 1048: Properties of each product.

Id	Name	SBO
s_0599	D-4'-Phosphopantothenate	
s_0421	ADP	

Kinetic Law

Derived unit contains undeclared units

$$v_{261} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[s_0467]}{\text{ic0467}} \right) + \text{ep0033} \cdot \left(\frac{[s_0033]}{\text{ic0033}} \right) + \text{ep0599} \cdot \left(\frac{[s_0599]}{\text{ic0599}} \right) + \text{ep0421} \cdot \left(\frac{[s_0421]}{\text{ic0421}} \right) \right) \quad (523)$$

Table 1049: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0033			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0599			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>

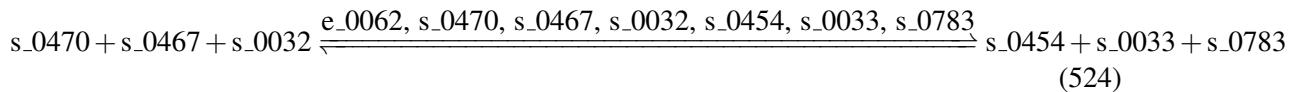
7.262 Reaction r_1076

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name pantothenate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1050: Properties of each reactant.

Id	Name	SBO
s_0470	beta-Alanine	
s_0467	ATP	
s_0032	(R)-Pantoate	

Modifiers

Table 1051: Properties of each modifier.

Id	Name	SBO
e_0062	panC	0000460
s_0470	beta-Alanine	
s_0467	ATP	
s_0032	(R)-Pantoate	

Id	Name	SBO
s_0454	AMP	
s_0033	(R)-Pantothenate	
s_0783	Diphosphate	

Products

Table 1052: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_0033	(R)-Pantothenate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{262} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0470} \cdot \left(\frac{[\text{s_0470}]}{\text{ic0470}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0032} \cdot \left(\frac{[\text{s_0032}]}{\text{ic0032}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep0033} \cdot \left(\frac{[\text{s_0033}]}{\text{ic0033}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (525)$$

Table 1053: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388884133 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388884133 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0470			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0032			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0033			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

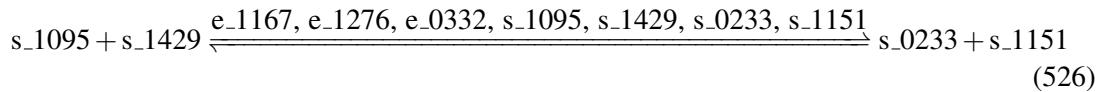
7.263 Reaction r_1081

This is a reversible reaction of two reactants forming two products influenced by seven modifiers.

Name phenylalanine transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1054: Properties of each reactant.

Id	Name	SBO
s_1095	L-Glutamate	
s_1429	Phenylpyruvate	

Modifiers

Table 1055: Properties of each modifier.

Id	Name	SBO
e_1167	ilvE	0000460
e_1276	tyrB	0000460
e_0332	aspC	0000460
s_1095	L-Glutamate	
s_1429	Phenylpyruvate	
s_0233	2-Oxoglutarate	
s_1151	L-Phenylalanine	

Products

Table 1056: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1151	L-Phenylalanine	

Kinetic Law

Derived unit contains undeclared units

$$v_{263} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep1429} \cdot \left(\frac{[\text{s_1429}]}{\text{ic1429}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s_0233}]}{\text{ic0233}} \right) + \text{ep1151} \cdot \left(\frac{[\text{s_1151}]}{\text{ic1151}} \right) \right) \quad (527)$$

Table 1057: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.026	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.026	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1429			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1151			-1.000	dimensionless	<input checked="" type="checkbox"/>

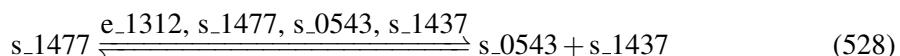
7.264 Reaction r_1123

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name Phosphatidylserine decarboxylase (n-C16:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1058: Properties of each reactant.

Id	Name	SBO
s_1477	phosphatidylserine (dihexadecanoyl, n-C16:0)	

Modifiers

Table 1059: Properties of each modifier.

Id	Name	SBO
e_1312	psd	0000460

Id	Name	SBO
s_1477	phosphatidylserine (dihexadecanoyl, n-C16:0)	
s_0543	CO2	
s_1437	phosphatidylethanolamine (dihexadecanoyl, n-C16:0)	

Products

Table 1060: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_1437	phosphatidylethanolamine (dihexadecanoyl, n-C16:0)	

Kinetic Law

Derived unit contains undeclared units

$$v_{264} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1477} \cdot \left(\frac{[\text{s_1477}]}{\text{ic1477}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1437} \cdot \left(\frac{[\text{s_1437}]}{\text{ic1437}} \right) \right) \quad (529)$$

Table 1061: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1477			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1437			-1.000	dimensionless	<input checked="" type="checkbox"/>

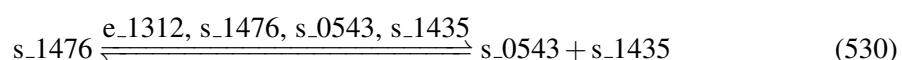
7.265 Reaction r_1124

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name Phosphatidylserine decarboxylase (n-C16:1)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1062: Properties of each reactant.

Id	Name	SBO
s_1476	phosphatidylserine (dihexadec-9-enoyl, n-C16:1)	

Modifiers

Table 1063: Properties of each modifier.

Id	Name	SBO
e_1312	psd	0000460
s_1476	phosphatidylserine (dihexadec-9-enoyl, n-C16:1)	
s_0543	CO2	
s_1435	phosphatidylethanolamine (dihexadec-9enoyl, n-C16:1)	

Products

Table 1064: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_1435	phosphatidylethanolamine (dihexadec-9enoyl, n-C16:1)	

Kinetic Law

Derived unit contains undeclared units

$$v_{265} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1476} \cdot \left(\frac{[\text{s_1476}]}{\text{ic1476}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1435} \cdot \left(\frac{[\text{s_1435}]}{\text{ic1435}} \right) \right) \quad (531)$$

Table 1065: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1476			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1435			-1.000	dimensionless	<input checked="" type="checkbox"/>

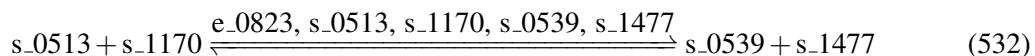
7.266 Reaction r_1130

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Phosphatidylserine syntase (n-C16:0)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1066: Properties of each reactant.

Id	Name	SBO
s_{.0513}	CDP-1,2-dihexadecanoylglycerol	
s_{.1170}	L-Serine	

Modifiers

Table 1067: Properties of each modifier.

Id	Name	SBO
e_{.0823}	pssA	0000460
s_{.0513}	CDP-1,2-dihexadecanoylglycerol	
s_{.1170}	L-Serine	
s_{.0539}	CMP	
s_{.1477}	phosphatidylserine (dihexadecanoyl, n-C16:0)	

Products

Table 1068: Properties of each product.

Id	Name	SBO
s_{.0539}	CMP	
s_{.1477}	phosphatidylserine (dihexadecanoyl, n-C16:0)	

Kinetic Law

Derived unit contains undeclared units

$$v_{266} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0513 \cdot \left(\frac{[\text{s_0513}]}{\text{ic}0513} \right) + \text{ep}1170 \cdot \left(\frac{[\text{s_1170}]}{\text{ic}1170} \right) + \text{ep}0539 \cdot \left(\frac{[\text{s_0539}]}{\text{ic}0539} \right) + \text{ep}1477 \cdot \left(\frac{[\text{s_1477}]}{\text{ic}1477} \right) \right) \quad (533)$$

Table 1069: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.009	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0513			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1170			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0539			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1477			-1.000	dimensionless	<input checked="" type="checkbox"/>

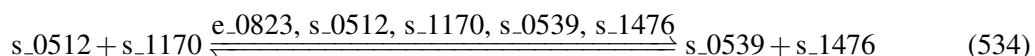
7.267 Reaction r_1131

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Phosphatidylserine syntase (n-C16:1)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1070: Properties of each reactant.

Id	Name	SBO
s_0512	CDP-1,2-dihexadec-9-enoylglycerol	
s_1170	L-Serine	

Modifiers

Table 1071: Properties of each modifier.

Id	Name	SBO
e_0823	pssA	0000460
s_0512	CDP-1,2-dihexadec-9-enoylglycerol	
s_1170	L-Serine	
s_0539	CMP	
s_1476	phosphatidylserine (dihexadec-9-enoyl, n-C16:1)	

Products

Table 1072: Properties of each product.

Id	Name	SBO
s_0539	CMP	
s_1476	phosphatidylserine (dihexadec-9-enoyl, n-C16:1)	

Kinetic Law

Derived unit contains undeclared units

$$v_{267} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0512 \cdot \left(\frac{[\text{s_0512}]}{\text{ic}0512} \right) + \text{ep}1170 \cdot \left(\frac{[\text{s_1170}]}{\text{ic}1170} \right) + \text{ep}0539 \cdot \left(\frac{[\text{s_0539}]}{\text{ic}0539} \right) + \text{ep}1476 \cdot \left(\frac{[\text{s_1476}]}{\text{ic}1476} \right) \right) \quad (535)$$

Table 1073: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.010	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0512			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1170			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0539			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1476			-1.000	dimensionless	<input checked="" type="checkbox"/>

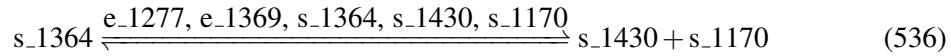
7.268 Reaction r_1134

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name phospho-L-serine phosphatase (periplasmic)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1074: Properties of each reactant.

Id	Name	SBO
s_1364	O-Phospho-L-serine	

Modifiers

Table 1075: Properties of each modifier.

Id	Name	SBO
e_1277	aphA	0000460
e_1369	serB	0000460
s_1364	O-Phospho-L-serine	
s_1430	Phosphate	
s_1170	L-Serine	

Products

Table 1076: Properties of each product.

Id	Name	SBO
s_1430	Phosphate	
s_1170	L-Serine	

Kinetic Law

Derived unit contains undeclared units

$$v_{268} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1364} \cdot \left(\frac{[s_{1364}]}{\text{ic1364}} \right) + \text{ep1430} \cdot \left(\frac{[s_{1430}]}{\text{ic1430}} \right) + \text{ep1170} \cdot \left(\frac{[s_{1170}]}{\text{ic1170}} \right) \right) \quad (537)$$

Table 1077: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.147	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>
v0			0.147	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>
ep1364			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1170			-1.000	dimensionless	<input checked="" type="checkbox"/>

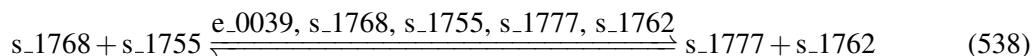
7.269 Reaction r_1137

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name phospho-N-acetylmuramoyl-pentapeptide-transferase (meso-2,6-diaminopimelate)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1078: Properties of each reactant.

Id	Name	SBO
s_1768	Undecaprenyl phosphate	
s_1755	UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine	

Modifiers

Table 1079: Properties of each modifier.

Id	Name
e_0039	mraY
s_1768	Undecaprenyl phosphate
s_1755	UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine
s_1777	Undecaprenyl-diphospho-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl
s_1762	UMP

Products

Table 1080: Properties of each product.

Id	Name
s_1777	Undecaprenyl-diphospho-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl
s_1762	UMP

Kinetic Law

Derived unit contains undeclared units

$$v_{269} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1768} \cdot \left(\frac{[\text{s_1768}]}{\text{ic1768}} \right) + \text{ep1755} \cdot \left(\frac{[\text{s_1755}]}{\text{ic1755}} \right) + \text{ep1777} \cdot \left(\frac{[\text{s_1777}]}{\text{ic1777}} \right) + \text{ep1762} \cdot \left(\frac{[\text{s_1762}]}{\text{ic1762}} \right) \right) \quad (539)$$

Table 1081: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1768			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1755			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1777			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1762			-1.000	dimensionless	<input checked="" type="checkbox"/>

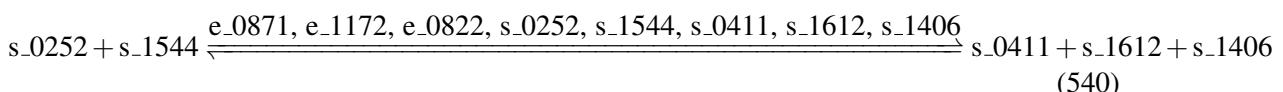
7.270 Reaction r_1139

This is a reversible reaction of two reactants forming three products influenced by eight modifiers.

Name phosphoadenylyl-sulfate reductase (thioredoxin)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1082: Properties of each reactant.

Id	Name	SBO
s_0252	3'-Phosphoadenylyl sulfate	
s_1544	Reduced thioredoxin	

Modifiers

Table 1083: Properties of each modifier.

Id	Name	SBO
e_0871	cysH	0000460
e_1172	trxA	0000460
e_0822	trxC	0000460
s_0252	3'-Phosphoadenylyl sulfate	
s_1544	Reduced thioredoxin	
s_0411	Adenosine 3',5'-bisphosphate	
s_1612	Sulfite	
s_1406	Oxidized thioredoxin	

Products

Table 1084: Properties of each product.

Id	Name	SBO
s_0411	Adenosine 3',5'-bisphosphate	
s_1612	Sulfite	
s_1406	Oxidized thioredoxin	

Kinetic Law

Derived unit contains undeclared units

$$v_{270} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0252 \cdot \left(\frac{[\text{s_0252}]}{\text{ic0252}} \right) + \text{ep}1544 \cdot \left(\frac{[\text{s_1544}]}{\text{ic1544}} \right) + \text{ep}0411 \cdot \left(\frac{[\text{s_0411}]}{\text{ic0411}} \right) + \text{ep}1612 \cdot \left(\frac{[\text{s_1612}]}{\text{ic1612}} \right) + \text{ep}1406 \cdot \left(\frac{[\text{s_1406}]}{\text{ic1406}} \right) \right) \quad (541)$$

Table 1085: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0252			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1544			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0411			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1612			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1406			-1.000	dimensionless	<input checked="" type="checkbox"/>

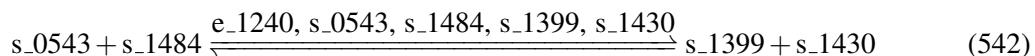
7.271 Reaction r_1141

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name phosphoenolpyruvate carboxylase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1086: Properties of each reactant.

Id	Name	SBO
s_0543	CO2	
s_1484	Phosphoenolpyruvate	

Modifiers

Table 1087: Properties of each modifier.

Id	Name	SBO
e_1240	ppc	0000460
s_0543	CO2	
s_1484	Phosphoenolpyruvate	
s_1399	Oxaloacetate	
s_1430	Phosphate	

Products

Table 1088: Properties of each product.

Id	Name	SBO
s_1399	Oxaloacetate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{271} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1484} \cdot \left(\frac{[\text{s_1484}]}{\text{ic1484}} \right) + \text{ep1399} \cdot \left(\frac{[\text{s_1399}]}{\text{ic1399}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (543)$$

Table 1089: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.493	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.493	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0543			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1484			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1399			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

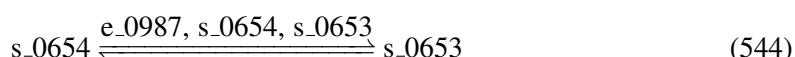
7.272 Reaction r_1150

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name phosphoglcosamine mutase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1090: Properties of each reactant.

Id	Name	SBO
s_0654	D-Glucosamine 6-phosphate	

Modifiers

Table 1091: Properties of each modifier.

Id	Name	SBO
e_0987	glmM	0000460
s_0654	D-Glucosamine 6-phosphate	
s_0653	D-Glucosamine 1-phosphate	

Product

Table 1092: Properties of each product.

Id	Name	SBO
s_0653	D-Glucosamine 1-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{272} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0654} \cdot \left(\frac{[\text{s}_0654]}{\text{ic0654}} \right) + \text{ep0653} \cdot \left(\frac{[\text{s}_0653]}{\text{ic0653}} \right) \right) \quad (545)$$

Table 1093: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0654			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0653			-1.000	dimensionless	<input checked="" type="checkbox"/>

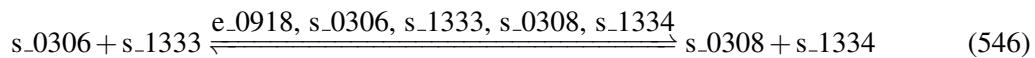
7.273 Reaction r_1151

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name phosphoglycerate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1094: Properties of each reactant.

Id	Name	SBO
s_0306	3-Phospho-D-glycerate	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 1095: Properties of each modifier.

Id	Name	SBO
e_0918	serA	0000460
s_0306	3-Phospho-D-glycerate	
s_1333	Nicotinamide adenine dinucleotide	
s_0308	3-Phosphohydroxypyruvate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Products

Table 1096: Properties of each product.

Id	Name	SBO
s_0308	3-Phosphohydroxypyruvate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{273} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0306} \cdot \left(\frac{[\text{s_0306}]}{\text{ic0306}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep0308} \cdot \left(\frac{[\text{s_0308}]}{\text{ic0308}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) \right) \quad (547)$$

Table 1097: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.147	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.147	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0306			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0308			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

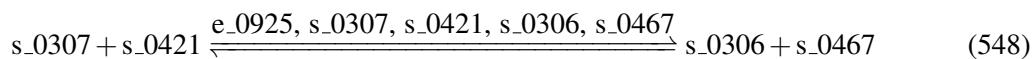
7.274 Reaction r_1152

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name phosphoglycerate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1098: Properties of each reactant.

Id	Name	SBO
s_0307	3-Phospho-D-glyceroyl phosphate	
s_0421	ADP	

Modifiers

Table 1099: Properties of each modifier.

Id	Name	SBO
e_0925	pgk	0000460
s_0307	3-Phospho-D-glyceroyl phosphate	
s_0421	ADP	
s_0306	3-Phospho-D-glycerate	
s_0467	ATP	

Products

Table 1100: Properties of each product.

Id	Name	SBO
s_0306	3-Phospho-D-glycerate	
s_0467	ATP	

Kinetic Law

Derived unit contains undeclared units

$$v_{274} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0307} \cdot \left(\frac{[\text{s}_0307]}{\text{ic0307}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep0306} \cdot \left(\frac{[\text{s}_0306]}{\text{ic0306}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) \right) \quad (549)$$

Table 1101: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.788	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.788	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0307			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0306			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			-1.000	dimensionless	<input checked="" type="checkbox"/>

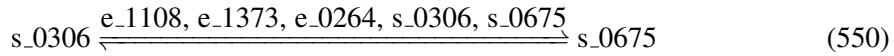
7.275 Reaction r_1153

This is a reversible reaction of one reactant forming one product influenced by five modifiers.

Name phosphoglycerate mutase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1102: Properties of each reactant.

Id	Name	SBO
s_{_0306}	3-Phospho-D-glycerate	

Modifiers

Table 1103: Properties of each modifier.

Id	Name	SBO
e_{_1108}	gpmI	0000460
e_{_1373}	gpmB	0000460
e_{_0264}	gpmA	0000460
s_{_0306}	3-Phospho-D-glycerate	
s_{_0675}	D-Glycerate 2-phosphate	

Product

Table 1104: Properties of each product.

Id	Name	SBO
s_{_0675}	D-Glycerate 2-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{275} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0306} \cdot \left(\frac{[s_{_0306}]}{\text{ic0306}} \right) + \text{ep0675} \cdot \left(\frac{[s_{_0675}]}{\text{ic0675}} \right) \right) \quad (551)$$

Table 1105: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.641	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.641	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0306			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0675			-1.000	dimensionless	<input checked="" type="checkbox"/>

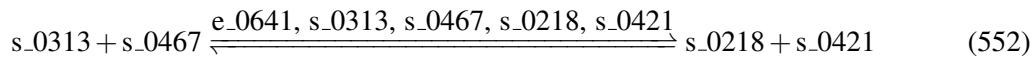
7.276 Reaction r_1198

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name phosphomethylpyrimidine kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1106: Properties of each reactant.

Id	Name	SBO
s_0313	4-Amino-2-methyl-5-phosphomethylpyrimidine	
s_0467	ATP	

Modifiers

Table 1107: Properties of each modifier.

Id	Name	SBO
e_0641	thiD	0000460
s_0313	4-Amino-2-methyl-5-phosphomethylpyrimidine	
s_0467	ATP	
s_0218	2-Methyl-4-amino-5-hydroxymethylpyrimidine diphosphate	
s_0421	ADP	

Products

Table 1108: Properties of each product.

Id	Name	SBO
s_0218	2-Methyl-4-amino-5-hydroxymethylpyrimidine diphosphate	
s_0421	ADP	

Kinetic Law

Derived unit contains undeclared units

$$v_{276} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0313} \cdot \left(\frac{[\text{s_0313}]}{\text{ic0313}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0218} \cdot \left(\frac{[\text{s_0218}]}{\text{ic0218}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) \right) \quad (553)$$

Table 1109: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0313			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0218			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>

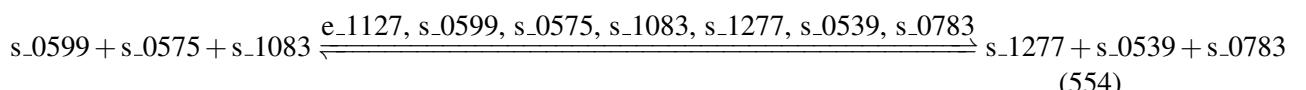
7.277 Reaction r_1200

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name phosphopantothenate-cysteine ligase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1110: Properties of each reactant.

Id	Name	SBO
s_0599	D-4'-Phosphopantothenate	
s_0575	CTP	
s_1083	L-Cysteine	

Modifiers

Table 1111: Properties of each modifier.

Id	Name	SBO
e_1127	coaBC	0000460
s_0599	D-4'-Phosphopantothenate	
s_0575	CTP	
s_1083	L-Cysteine	
s_1277	N-((R)-4-Phosphopantothenoyl)-L-cysteine	
s_0539	CMP	
s_0783	Diphosphate	

Products

Table 1112: Properties of each product.

Id	Name	SBO
s_1277	N-((R)-4-Phosphopantothenoyl)-L-cysteine	
s_0539	CMP	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{277} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0599 \cdot \left(\frac{[\text{s_0599}]}{\text{ic0599}} \right) + \text{ep}0575 \cdot \left(\frac{[\text{s_0575}]}{\text{ic0575}} \right) + \text{ep}1083 \cdot \left(\frac{[\text{s_1083}]}{\text{ic1083}} \right) + \text{ep}1277 \cdot \left(\frac{[\text{s_1277}]}{\text{ic1277}} \right) + \text{ep}0539 \cdot \left(\frac{[\text{s_0539}]}{\text{ic0539}} \right) + \text{ep}0783 \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (555)$$

Table 1113: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0599			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0575			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1083			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1277			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0539			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

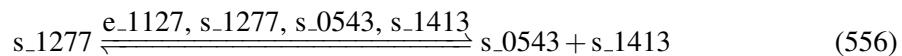
7.278 Reaction r_1201

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name phosphopantethenoylcysteine decarboxylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1114: Properties of each reactant.

Id	Name	SBO
s_1277	N-((R)-4-Phosphopantethenoyl)-L-cysteine	

Modifiers

Table 1115: Properties of each modifier.

Id	Name	SBO
e_1127	coaBC	0000460
s_1277	N-((R)-4-Phosphopantethenoyl)-L-cysteine	
s_0543	CO2	
s_1413	Pantetheine 4'-phosphate	

Products

Table 1116: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_1413	Pantetheine 4'-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{278} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1277} \cdot \left(\frac{[\text{s_1277}]}{\text{ic1277}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1413} \cdot \left(\frac{[\text{s_1413}]}{\text{ic1413}} \right) \right) \quad (557)$$

Table 1117: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.97856388897518 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1277			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1413			-1.000	dimensionless	<input checked="" type="checkbox"/>

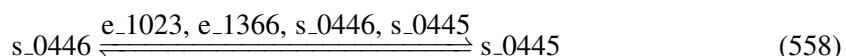
7.279 Reaction r_1202

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name phosphopentomutase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1118: Properties of each reactant.

Id	Name	SBO
s_0446	alpha-D-Ribose 5-phosphate	

Modifiers

Table 1119: Properties of each modifier.

Id	Name	SBO
e_1023	yhfW	0000460
e_1366	deoB	0000460
s_0446	alpha-D-Ribose 5-phosphate	
s_0445	alpha-D-Ribose 1-phosphate	

Product

Table 1120: Properties of each product.

Id	Name	SBO
s_0445	alpha-D-Ribose 1-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{279} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0446} \cdot \left(\frac{[\text{s}_0446]}{\text{ic0446}} \right) + \text{ep0445} \cdot \left(\frac{[\text{s}_0445]}{\text{ic0445}} \right) \right) \quad (559)$$

Table 1121: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.32217621775477 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.32217621775477 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0446			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0445			-1.000	dimensionless	<input checked="" type="checkbox"/>

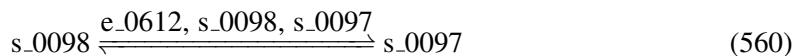
7.280 Reaction r_1204

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name phosphoribosyl-AMP cyclohydrolase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1122: Properties of each reactant.

Id	Name	SBO
s_0098	1-(5-Phosphoribosyl)-AMP	

Modifiers

Table 1123: Properties of each modifier.

Id	Name	SBO
e_0612	hisI	00004
s_0098	1-(5-Phosphoribosyl)-AMP	
s_0097	1-(5-Phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino]imidazole-4-carboxamide	

Product

Table 1124: Properties of each product.

Id	Name	SBO
s_0097	1-(5-Phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino]imidazole-4-carboxamide	

Kinetic Law

Derived unit contains undeclared units

$$v_{280} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0098} \cdot \left(\frac{[\text{s_0098}]}{\text{ic0098}} \right) + \text{ep0097} \cdot \left(\frac{[\text{s_0097}]}{\text{ic0097}} \right) \right) \quad (561)$$

Table 1125: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>
v0			0.013	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>
ep0098			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0097			-1.000	dimensionless	<input checked="" type="checkbox"/>

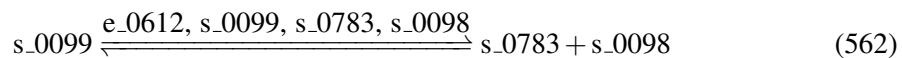
7.281 Reaction r_1205

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name phosphoribosyl-ATP pyrophosphatase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1126: Properties of each reactant.

Id	Name	SBO
s_{_0099}	1-(5-Phosphoribosyl)-ATP	

Modifiers

Table 1127: Properties of each modifier.

Id	Name	SBO
e_{_0612}	hisI	0000460
s_{_0099}	1-(5-Phosphoribosyl)-ATP	
s_{_0783}	Diphosphate	
s_{_0098}	1-(5-Phosphoribosyl)-AMP	

Products

Table 1128: Properties of each product.

Id	Name	SBO
s_0783	Diphosphate	
s_0098	1-(5-Phosphoribosyl)-AMP	

Kinetic Law

Derived unit contains undeclared units

$$v_{281} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0099} \cdot \left(\frac{[\text{s}_0099]}{\text{ic0099}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) + \text{ep0098} \cdot \left(\frac{[\text{s}_0098]}{\text{ic0098}} \right) \right) \quad (563)$$

Table 1129: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0099			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0098			-1.000	dimensionless	<input checked="" type="checkbox"/>

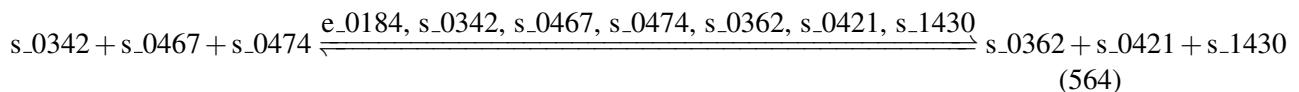
7.282 Reaction r_1206

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name phosphoribosylaminoimidazole carboxylase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1130: Properties of each reactant.

Id	Name	SBO
s_0342	5-amino-1-(5-phospho-D-ribosyl)imidazole	
s_0467	ATP	
s_0474	Bicarbonate	

Modifiers

Table 1131: Properties of each modifier.

Id	Name	SBO
e_0184	purK	0000460
s_0342	5-amino-1-(5-phospho-D-ribosyl)imidazole	
s_0467	ATP	
s_0474	Bicarbonate	
s_0362	5-phosphoribosyl-5-carboxyaminoimidazole	
s_0421	ADP	
s_1430	Phosphate	

Products

Table 1132: Properties of each product.

Id	Name	SBO
s_0362	5-phosphoribosyl-5-carboxyaminoimidazole	
s_0421	ADP	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{282} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0342 \cdot \left(\frac{[\text{s_0342}]}{\text{ic0342}} \right) + \text{ep}0467 \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep}0474 \cdot \left(\frac{[\text{s_0474}]}{\text{ic0474}} \right) + \text{ep}0362 \cdot \left(\frac{[\text{s_0362}]}{\text{ic0362}} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (565)$$

Table 1133: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0342			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0474			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0362			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

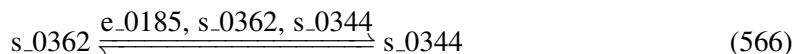
7.283 Reaction r_1207

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name phosphoribosylaminoimidazole carboxylase (mutase rxn)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1134: Properties of each reactant.

Id	Name	SBO
s_{-0362}	5-phosphoribosyl-5-carboxyaminoimidazole	

Modifiers

Table 1135: Properties of each modifier.

Id	Name	SBO
e_{-0185}	purE	0000460
s_{-0362}	5-phosphoribosyl-5-carboxyaminoimidazole	
s_{-0344}	5-amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxylate	

Product

Table 1136: Properties of each product.

Id	Name	SBO
s_0344	5-amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxylate	

Kinetic Law

Derived unit contains undeclared units

$$v_{283} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0362} \cdot \left(\frac{[\text{s}_0362]}{\text{ic0362}} \right) + \text{ep0344} \cdot \left(\frac{[\text{s}_0344]}{\text{ic0344}} \right) \right) \quad (567)$$

Table 1137: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0362			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0344			-1.000	dimensionless	<input checked="" type="checkbox"/>

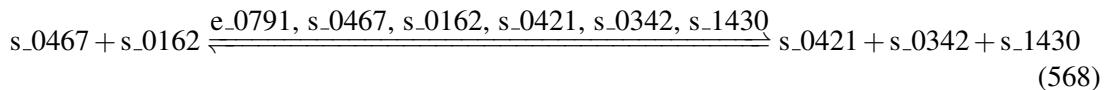
7.284 Reaction r_1208

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name phosphoribosylaminoimidazole synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1138: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0162	2-(Formamido)-N1-(5-phospho-D-ribosyl)acetamidine	

Modifiers

Table 1139: Properties of each modifier.

Id	Name	SBO
e_0791	purM	0000460
s_0467	ATP	
s_0162	2-(Formamido)-N1-(5-phospho-D-ribosyl)acetamidine	
s_0421	ADP	
s_0342	5-amino-1-(5-phospho-D-ribosyl)imidazole	
s_1430	Phosphate	

Products

Table 1140: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0342	5-amino-1-(5-phospho-D-ribosyl)imidazole	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{284} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0162} \cdot \left(\frac{[\text{s}_0162]}{\text{ic0162}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep0342} \cdot \left(\frac{[\text{s}_0342]}{\text{ic0342}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) \right) \quad (569)$$

Table 1141: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0162			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0342			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

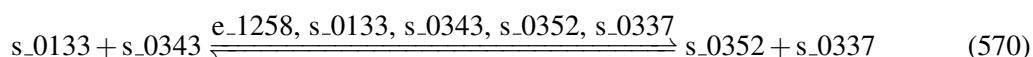
7.285 Reaction r_1209

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name phosphoribosylaminoimidazolecarboxamide formyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1142: Properties of each reactant.

Id	Name	SBO
s_0133	10-Formyltetrahydrofolate	
s_0343	5-Amino-1-(5-Phospho-D-ribosyl)imidazole-4-carboxamide	

Modifiers

Table 1143: Properties of each modifier.

Id	Name	SBO
e_1258	purH	0000460
s_0133	10-Formyltetrahydrofolate	
s_0343	5-Amino-1-(5-Phospho-D-ribosyl)imidazole-4-carboxamide	
s_0352	5-Formamido-1-(5-phospho-D-ribosyl)imidazole-4-carboxamide	
s_0337	5,6,7,8-Tetrahydrofolate	

Products

Table 1144: Properties of each product.

Id	Name	SBO
s_0352	5-Formamido-1-(5-phospho-D-ribosyl)imidazole-4-carboxamide	
s_0337	5,6,7,8-Tetrahydrofolate	

Kinetic Law

Derived unit contains undeclared units

$$v_{285} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0133} \cdot \left(\frac{[\text{s_0133}]}{\text{ic0133}} \right) + \text{ep0343} \cdot \left(\frac{[\text{s_0343}]}{\text{ic0343}} \right) + \text{ep0352} \cdot \left(\frac{[\text{s_0352}]}{\text{ic0352}} \right) + \text{ep0337} \cdot \left(\frac{[\text{s_0337}]}{\text{ic0337}} \right) \right) \quad (571)$$

Table 1145: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.075	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.075	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0133			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0343			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0352			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0337			-1.000	dimensionless	<input checked="" type="checkbox"/>

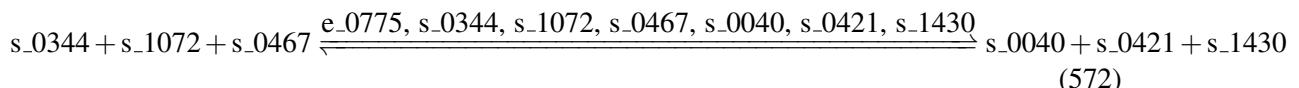
7.286 Reaction r_1210

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name phosphoribosylaminoimidazolesuccinocarboxamide synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1146: Properties of each reactant.

Id	Name	SBO
s_0344	5-amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxylate	
s_1072	L-Aspartate	
s_0467	ATP	

Modifiers

Table 1147: Properties of each modifier.

Id	Name	SBO
e_0775	purC	0000460
s_0344	5-amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxylate	
s_1072	L-Aspartate	
s_0467	ATP	
s_0040	(S)-2-[5-Amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxamido]succinate	
s_0421	ADP	
s_1430	Phosphate	

Products

Table 1148: Properties of each product.

Id	Name	SBO
s_0040	(S)-2-[5-Amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxamido]succinate	
s_0421	ADP	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{286} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0344} \cdot \left(\frac{[\text{s}_0344]}{\text{ic0344}} \right) + \text{ep1072} \cdot \left(\frac{[\text{s}_1072]}{\text{ic1072}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep0040} \cdot \left(\frac{[\text{s}_0040]}{\text{ic0040}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) \right) \quad (573)$$

Table 1149: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0344			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1072			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0040			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

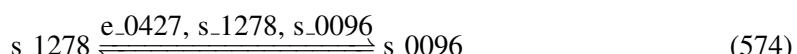
7.287 Reaction r_1211

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name phosphoribosylanthranilate isomerase (irreversible)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1150: Properties of each reactant.

Id	Name	SBO
s_1278	N-(5-Phospho-D-ribosyl)anthranilate	

Modifiers

Table 1151: Properties of each modifier.

Id	Name	SBO
e_0427	trpC	0000460
s_1278	N-(5-Phospho-D-ribosyl)anthranilate	
s_0096	1-(2-Carboxyphenylamino)-1-deoxy-D-ribulose 5-phosphate	

Product

Table 1152: Properties of each product.

Id	Name	SBO
s_0096	1-(2-Carboxyphenylamino)-1-deoxy-D-ribulose 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{287} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1278} \cdot \left(\frac{[s_{1278}]}{\text{ic1278}} \right) + \text{ep0096} \cdot \left(\frac{[s_{0096}]}{\text{ic0096}} \right) \right) \quad (575)$$

Table 1153: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1278			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0096			-1.000	dimensionless	<input checked="" type="checkbox"/>

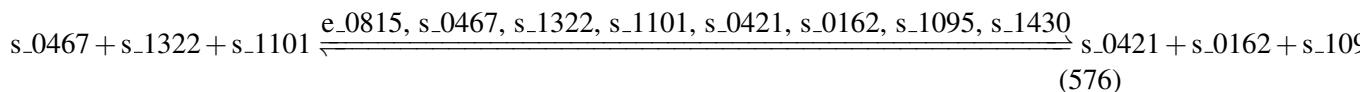
7.288 Reaction r_1212

This is a reversible reaction of three reactants forming four products influenced by eight modifiers.

Name phosphoribosylformylglycinamide synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1154: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1322	N2-Formyl-N1-(5-phospho-D-ribosyl)glycinamide	
s_1101	L-Glutamine	

Modifiers

Table 1155: Properties of each modifier.

Id	Name	SBO
e_0815	purL	0000460
s_0467	ATP	
s_1322	N2-Formyl-N1-(5-phospho-D-ribosyl)glycinamide	
s_1101	L-Glutamine	
s_0421	ADP	
s_0162	2-(Formamido)-N1-(5-phospho-D-ribosyl)acetamidine	

Id	Name	SBO
s_1095	L-Glutamate	
s_1430	Phosphate	

Products

Table 1156: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0162	2-(Formamido)-N1-(5-phospho-D-ribosyl)acetamidine	
s_1095	L-Glutamate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{288} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1322} \cdot \left(\frac{[\text{s_1322}]}{\text{ic1322}} \right) + \text{ep1101} \cdot \left(\frac{[\text{s_1101}]}{\text{ic1101}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0162} \cdot \left(\frac{[\text{s_0162}]}{\text{ic0162}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (577)$$

Table 1157: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1322			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1101			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0162			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

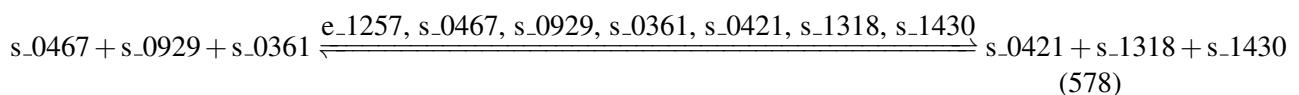
7.289 Reaction r_1214

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name phosphoribosylglycinamide synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1158: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0929	Glycine	
s_0361	5-Phospho-beta-D-ribosylamine	

Modifiers

Table 1159: Properties of each modifier.

Id	Name	SBO
e_1257	purD	0000460
s_0467	ATP	
s_0929	Glycine	
s_0361	5-Phospho-beta-D-ribosylamine	
s_0421	ADP	
s_1318	N1-(5-Phospho-D-ribosyl)glycinamide	
s_1430	Phosphate	

Products

Table 1160: Properties of each product.

Id	Name	SBO
s_0421	ADP	

Id	Name	SBO
s_1318	N1-(5-Phospho-D-ribosyl)glycinamide	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{289} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0929} \cdot \left(\frac{[\text{s_0929}]}{\text{ic0929}} \right) + \text{ep0361} \cdot \left(\frac{[\text{s_0361}]}{\text{ic0361}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1318} \cdot \left(\frac{[\text{s_1318}]}{\text{ic1318}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (579)$$

Table 1161: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.061	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0929			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0361			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1318			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

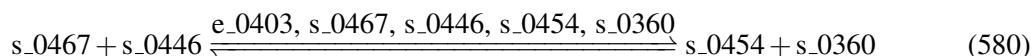
7.290 Reaction r_1215

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name phosphoribosylpyrophosphate synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1162: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0446	alpha-D-Ribose 5-phosphate	

Modifiers

Table 1163: Properties of each modifier.

Id	Name	SBO
e_0403	prs	0000460
s_0467	ATP	
s_0446	alpha-D-Ribose 5-phosphate	
s_0454	AMP	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	

Products

Table 1164: Properties of each product.

Id	Name	SBO
s_0454	AMP	
s_0360	5-Phospho-alpha-D-ribose 1-diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{290} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0446} \cdot \left(\frac{[\text{s_0446}]}{\text{ic0446}} \right) + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep0360} \cdot \left(\frac{[\text{s_0360}]}{\text{ic0360}} \right) \right) \quad (581)$$

Table 1165: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.129	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.129	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0446			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0360			-1.000	dimensionless	<input checked="" type="checkbox"/>

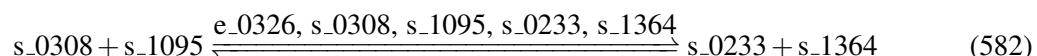
7.291 Reaction r_1217

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name phosphoserine transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1166: Properties of each reactant.

Id	Name	SBO
s_0308	3-Phosphohydroxypyruvate	
s_1095	L-Glutamate	

Modifiers

Table 1167: Properties of each modifier.

Id	Name	SBO
e_0326	serC	0000460
s_0308	3-Phosphohydroxypyruvate	
s_1095	L-Glutamate	
s_0233	2-Oxoglutarate	
s_1364	O-Phospho-L-serine	

Products

Table 1168: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1364	O-Phospho-L-serine	

Kinetic Law

Derived unit contains undeclared units

$$v_{291} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0308 \cdot \left(\frac{[\text{s_0308}]}{\text{ic}0308} \right) + \text{ep}1095 \cdot \left(\frac{[\text{s_1095}]}{\text{ic}1095} \right) + \text{ep}0233 \cdot \left(\frac{[\text{s_0233}]}{\text{ic}0233} \right) + \text{ep}1364 \cdot \left(\frac{[\text{s_1364}]}{\text{ic}1364} \right) \right) \quad (583)$$

Table 1169: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.147	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.147	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0308			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1364			-1.000	dimensionless	<input checked="" type="checkbox"/>

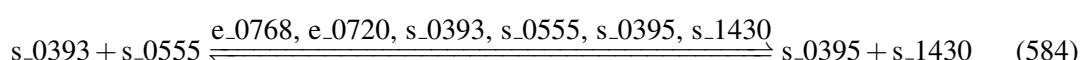
7.292 Reaction r_1218

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name phosphotransacetylase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1170: Properties of each reactant.

Id	Name	SBO
s_0393	Acetyl phosphate	
s_0555	Coenzyme A	

Modifiers

Table 1171: Properties of each modifier.

Id	Name	SBO
e_0768	eutD	0000460
e_0720	pta	0000460
s_0393	Acetyl phosphate	
s_0555	Coenzyme A	
s_0395	Acetyl-CoA	
s_1430	Phosphate	

Products

Table 1172: Properties of each product.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{292} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0393 \cdot \left(\frac{[\text{s_0393}]}{\text{ic0393}} \right) + \text{ep}0555 \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) + \text{ep}0395 \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (585)$$

Table 1173: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.081	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.081	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0393			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0395			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

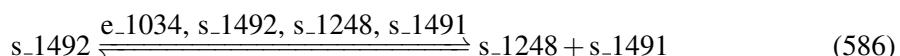
7.293 Reaction r_1220

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name Pimeloyl-[ACP] methyl ester esterase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1174: Properties of each reactant.

Id	Name	SBO
s_1492	Pimeloyl-[acyl-carrier protein] methyl ester	

Modifiers

Table 1175: Properties of each modifier.

Id	Name	SBO
e_1034	bioH	0000460
s_1492	Pimeloyl-[acyl-carrier protein] methyl ester	
s_1248	Methanol	
s_1491	Pimeloyl-[acyl-carrier protein]	

Products

Table 1176: Properties of each product.

Id	Name	SBO
s_1248	Methanol	

Id	Name	SBO
s_1491	Pimeloyl-[acyl-carrier protein]	

Kinetic Law

Derived unit contains undeclared units

$$v_{293} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1492} \cdot \left(\frac{[\text{s_1492}]}{\text{ic1492}} \right) + \text{ep1248} \cdot \left(\frac{[\text{s_1248}]}{\text{ic1248}} \right) + \text{ep1491} \cdot \left(\frac{[\text{s_1491}]}{\text{ic1491}} \right) \right) \quad (587)$$

Table 1177: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1492			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1248			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1491			-1.000	dimensionless	<input checked="" type="checkbox"/>

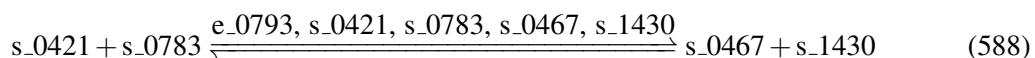
7.294 Reaction r_1222

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name polyphosphate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1178: Properties of each reactant.

Id	Name	SBO
s_0421	ADP	
s_0783	Diphosphate	

Modifiers

Table 1179: Properties of each modifier.

Id	Name	SBO
e_0793	ppk	0000460
s_0421	ADP	
s_0783	Diphosphate	
s_0467	ATP	
s_1430	Phosphate	

Products

Table 1180: Properties of each product.

Id	Name	SBO
s_0467	ATP	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{294} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) \right) \quad (589)$$

Table 1181: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.485	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.485	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0421			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

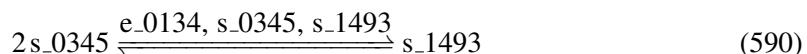
7.295 Reaction r_1223

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name porphobilinogen synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1182: Properties of each reactant.

Id	Name	SBO
s_0345	5-Amino-4-oxopentanoate	

Modifiers

Table 1183: Properties of each modifier.

Id	Name	SBO
e_0134	hemB	0000460
s_0345	5-Amino-4-oxopentanoate	
s_1493	Porphobilinogen	

Product

Table 1184: Properties of each product.

Id	Name	SBO
s_1493	Porphobilinogen	

Kinetic Law

Derived unit contains undeclared units

$$v_{295} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0345} \cdot \left(\frac{[\text{s_0345}]}{\text{ic0345}} \right) + \text{ep1493} \cdot \left(\frac{[\text{s_1493}]}{\text{ic1493}} \right) \right) \quad (591)$$

Table 1185: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.47113853781668 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.47113853781668 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0345			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1493			-1.000	dimensionless	<input checked="" type="checkbox"/>

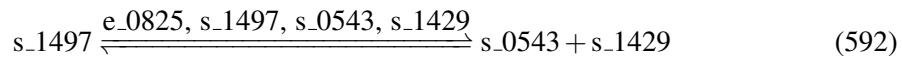
7.296 Reaction r_1224

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name prephenate dehydratase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1186: Properties of each reactant.

Id	Name	SBO
s_1497	Prephenate	

Modifiers

Table 1187: Properties of each modifier.

Id	Name	SBO
e_0825	pheA	0000460
s_1497	Prephenate	
s_0543	CO2	
s_1429	Phenylpyruvate	

Products

Table 1188: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_1429	Phenylpyruvate	

Kinetic Law

Derived unit contains undeclared units

$$v_{296} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1497} \cdot \left(\frac{[\text{s_1497}]}{\text{ic1497}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1429} \cdot \left(\frac{[\text{s_1429}]}{\text{ic1429}} \right) \right) \quad (593)$$

Table 1189: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.026	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.026	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1497			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1429			-1.000	dimensionless	<input checked="" type="checkbox"/>

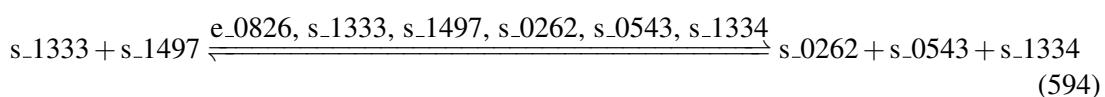
7.297 Reaction r_1225

This is a reversible reaction of two reactants forming three products influenced by six modifiers.

Name prephenate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1190: Properties of each reactant.

Id	Name	SBO
s_1333	Nicotinamide adenine dinucleotide	
s_1497	Prephenate	

Modifiers

Table 1191: Properties of each modifier.

Id	Name	SBO
e_0826	tyrA	0000460
s_1333	Nicotinamide adenine dinucleotide	
s_1497	Prephenate	
s_0262	3-(4-Hydroxyphenyl)pyruvate	
s_0543	CO2	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Products

Table 1192: Properties of each product.

Id	Name	SBO
s_0262	3-(4-Hydroxyphenyl)pyruvate	
s_0543	CO2	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{297} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) + \text{ep1497} \cdot \left(\frac{[\text{s}_1497]}{\text{ic1497}} \right) + \text{ep0262} \cdot \left(\frac{[\text{s}_0262]}{\text{ic0262}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s}_0543]}{\text{ic0543}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) \right) \quad (595)$$

Table 1193: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.019	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			0.019	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1497			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0262			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

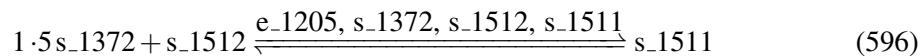
7.298 Reaction r_1230

This is a reversible reaction of two reactants forming one product influenced by four modifiers.

Name protoporphyrinogen oxidase (aerobic)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1194: Properties of each reactant.

Id	Name	SBO
s_1372	O2	
s_1512	Protoporphyrinogen IX	

Modifiers

Table 1195: Properties of each modifier.

Id	Name	SBO
e_1205	hemG	0000460
s_1372	O2	
s_1512	Protoporphyrinogen IX	
s_1511	Protoporphyrin	

Product

Table 1196: Properties of each product.

Id	Name	SBO
s_1511	Protoporphyrin	

Kinetic Law

Derived unit contains undeclared units

$$v_{298} = \text{vol}(\text{cell}) \cdot v_0 \\ \cdot \left(1 + \text{ep1372} \cdot \left(\frac{[\text{s_1372}]}{\text{ic1372}} \right) + \text{ep1512} \cdot \left(\frac{[\text{s_1512}]}{\text{ic1512}} \right) + \text{ep1511} \cdot \left(\frac{[\text{s_1511}]}{\text{ic1511}} \right) \right) \quad (597)$$

Table 1197: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317222945 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317222945 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1372			1.500	dimensionless	<input checked="" type="checkbox"/>
ep1512			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1511			-1.000	dimensionless	<input checked="" type="checkbox"/>

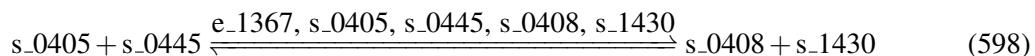
7.299 Reaction r_1232

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name purine-nucleoside phosphorylase (Adenosine)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1198: Properties of each reactant.

Id	Name	SBO
s_0405	Adenine	
s_0445	alpha-D-Ribose 1-phosphate	

Modifiers

Table 1199: Properties of each modifier.

Id	Name	SBO
e_1367	deoD	0000460
s_0405	Adenine	
s_0445	alpha-D-Ribose 1-phosphate	
s_0408	Adenosine	
s_1430	Phosphate	

Products

Table 1200: Properties of each product.

Id	Name	SBO
s_0408	Adenosine	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{299} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0405} \cdot \left(\frac{[\text{s_0405}]}{\text{ic0405}} \right) + \text{ep0445} \cdot \left(\frac{[\text{s_0445}]}{\text{ic0445}} \right) + \text{ep0408} \cdot \left(\frac{[\text{s_0408}]}{\text{ic0408}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (599)$$

Table 1201: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.32217619764956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.32217619764956 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0405			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0445			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0408			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

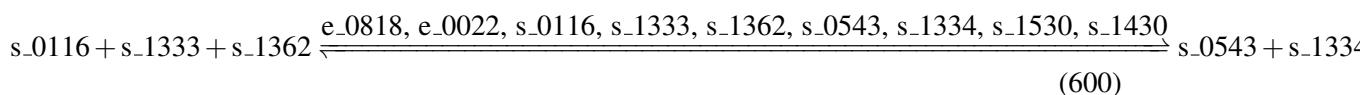
7.300 Reaction r_1245

This is a reversible reaction of three reactants forming four products influenced by nine modifiers.

Name Pyridoxine 5'-phosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1202: Properties of each reactant.

Id	Name	SBO
s_0116	1-deoxy-D-xylulose 5-phosphate	
s_1333	Nicotinamide adenine dinucleotide	
s_1362	O-Phospho-4-hydroxy-L-threonine	

Modifiers

Table 1203: Properties of each modifier.

Id	Name	SBO
e_0818	pdxJ	0000460
e_0022	pdxA	0000460
s_0116	1-deoxy-D-xylulose 5-phosphate	
s_1333	Nicotinamide adenine dinucleotide	
s_1362	O-Phospho-4-hydroxy-L-threonine	
s_0543	CO2	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1530	Pyridoxine 5'-phosphate	
s_1430	Phosphate	

Products

Table 1204: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1530	Pyridoxine 5'-phosphate	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{300} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep}0116 \cdot \left(\frac{[\text{s_0116}]}{\text{ic}0116} \right) + \text{ep}1333 \cdot \left(\frac{[\text{s_1333}]}{\text{ic}1333} \right) + \text{ep}1362 \cdot \left(\frac{[\text{s_1362}]}{\text{ic}1362} \right) + \text{ep}0543 \cdot \left(\frac{[\text{s_0543}]}{\text{ic}0543} \right) + \text{ep}1334 \cdot \left(\frac{[\text{s_1334}]}{\text{ic}1334} \right) + \text{ep}1530 \cdot \left(\frac{[\text{s_1530}]}{\text{ic}1530} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic}1430} \right) \right) \quad (601)$$

Table 1205: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317222495 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317222495 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0116			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1362			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1530			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

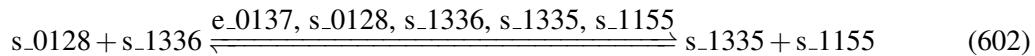
7.301 Reaction r_1250

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name pyrroline-5-carboxylate reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1206: Properties of each reactant.

Id	Name	SBO
s_0128	1-Pyrroline-5-carboxylate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 1207: Properties of each modifier.

Id	Name	SBO
e_0137	proc	0000460
s_0128	1-Pyrroline-5-carboxylate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1155	L-Proline	

Products

Table 1208: Properties of each product.

Id	Name	SBO
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1155	L-Proline	

Kinetic Law

Derived unit contains undeclared units

$$v_{301} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0128} \cdot \left(\frac{[s_{_0128}]}{\text{ic0128}} \right) + \text{ep1336} \cdot \left(\frac{[s_{_1336}]}{\text{ic1336}} \right) + \text{ep1335} \cdot \left(\frac{[s_{_1335}]}{\text{ic1335}} \right) + \text{ep1155} \cdot \left(\frac{[s_{_1155}]}{\text{ic1155}} \right) \right) \quad (603)$$

Table 1209: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.031	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.031	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0128			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1155			-1.000	dimensionless	<input checked="" type="checkbox"/>

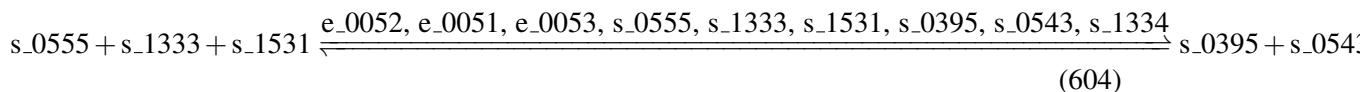
7.302 Reaction r_1251

This is a reversible reaction of three reactants forming three products influenced by nine modifiers.

Name pyruvate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1210: Properties of each reactant.

Id	Name	SBO
s_0555	Coenzyme A	
s_1333	Nicotinamide adenine dinucleotide	
s_1531	Pyruvate	

Modifiers

Table 1211: Properties of each modifier.

Id	Name	SBO
e_0052	aceF	0000460
e_0051	aceE	0000460
e_0053	lpdA	0000460
s_0555	Coenzyme A	

Id	Name	SBO
s_1333	Nicotinamide adenine dinucleotide	
s_1531	Pyruvate	
s_0395	Acetyl-CoA	
s_0543	CO2	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Products

Table 1212: Properties of each product.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0543	CO2	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{302} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0555} \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s_1531}]}{\text{ic1531}} \right) + \text{ep0395} \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) \right) \quad (605)$$

Table 1213: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.407	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.407	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0555			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0395			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>

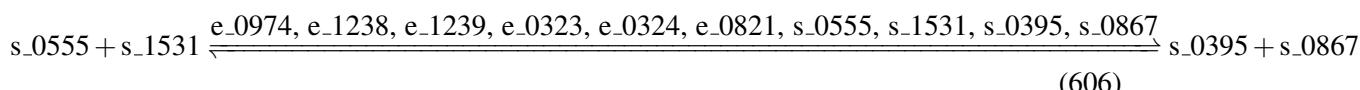
7.303 Reaction r_1252

This is a reversible reaction of two reactants forming two products influenced by ten modifiers.

Name pyruvate formate lyase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1214: Properties of each reactant.

Id	Name	SBO
s_{_0555}	Coenzyme A	
s_{_1531}	Pyruvate	

Modifiers

Table 1215: Properties of each modifier.

Id	Name	SBO
e_{_0974}	tdcE	0000460
e_{_1238}	pflD	0000460
e_{_1239}	pflC	0000460
e_{_0323}	pflA	0000460
e_{_0324}	pflB	0000460
e_{_0821}	grcA	0000460
s_{_0555}	Coenzyme A	
s_{_1531}	Pyruvate	
s_{_0395}	Acetyl-CoA	
s_{_0867}	Formate	

Products

Table 1216: Properties of each product.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0867	Formate	

Kinetic Law

Derived unit contains undeclared units

$$v_{303} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0555 \cdot \left(\frac{[\text{s_0555}]}{\text{ic}0555} \right) + \text{ep}1531 \cdot \left(\frac{[\text{s_1531}]}{\text{ic}1531} \right) + \text{ep}0395 \cdot \left(\frac{[\text{s_0395}]}{\text{ic}0395} \right) + \text{ep}0867 \cdot \left(\frac{[\text{s_0867}]}{\text{ic}0867} \right) \right) \quad (607)$$

Table 1217: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.097	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.097	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0555			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0395			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0867			-1.000	dimensionless	<input checked="" type="checkbox"/>

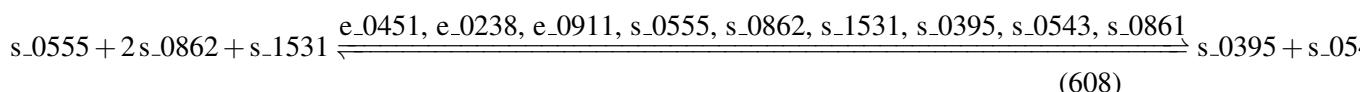
7.304 Reaction r_1255

This is a reversible reaction of three reactants forming three products influenced by nine modifiers.

Name pyruvate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1218: Properties of each reactant.

Id	Name	SBO
s_0555	Coenzyme A	
s_0862	flavodoxin semi oxidized	
s_1531	Pyruvate	

Modifiers

Table 1219: Properties of each modifier.

Id	Name	SBO
e_0451	ydbK	0000460
e_0238	fldA	0000460
e_0911	fldB	0000460
s_0555	Coenzyme A	
s_0862	flavodoxin semi oxidized	
s_1531	Pyruvate	
s_0395	Acetyl-CoA	
s_0543	CO2	
s_0861	Flavodoxin reduced	

Products

Table 1220: Properties of each product.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_0543	CO2	
s_0861	Flavodoxin reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{304} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0555 \cdot \left(\frac{[\text{s_0555}]}{\text{ic0555}} \right) + \text{ep}0862 \cdot \left(\frac{[\text{s_0862}]}{\text{ic0862}} \right) + \text{ep}1531 \cdot \left(\frac{[\text{s_1531}]}{\text{ic1531}} \right) + \text{ep}0395 \cdot \left(\frac{[\text{s_0395}]}{\text{ic0395}} \right) + \text{ep}0543 \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep}0861 \cdot \left(\frac{[\text{s_0861}]}{\text{ic0861}} \right) \right) \quad (609)$$

Table 1221: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.015	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.015	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0555			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0862			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0395			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0861			-2.000	dimensionless	<input checked="" type="checkbox"/>

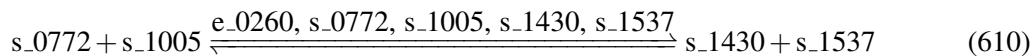
7.305 Reaction r_1259

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name quinolinate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1222: Properties of each reactant.

Id	Name	SBO
s_0772	Dihydroxyacetone phosphate	
s_1005	Iminoaspartate	

Modifiers

Table 1223: Properties of each modifier.

Id	Name	SBO
e_0260	nadA	0000460
s_0772	Dihydroxyacetone phosphate	
s_1005	Iminoaspartate	
s_1430	Phosphate	
s_1537	Quinolinate	

Products

Table 1224: Properties of each product.

Id	Name	SBO
s_1430	Phosphate	
s_1537	Quinolinate	

Kinetic Law

Derived unit contains undeclared units

$$v_{305} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0772 \cdot \left(\frac{[\text{s_0772}]}{\text{ic0772}} \right) + \text{ep}1005 \cdot \left(\frac{[\text{s_1005}]}{\text{ic1005}} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) + \text{ep}1537 \cdot \left(\frac{[\text{s_1537}]}{\text{ic1537}} \right) \right) \quad (611)$$

Table 1225: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.15541120467916 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.15541120467916 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0772			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1005			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1537			-1.000	dimensionless	<input checked="" type="checkbox"/>

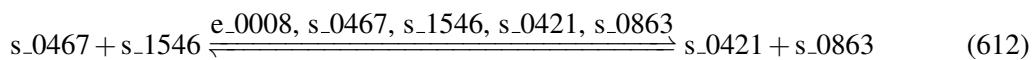
7.306 Reaction r_1264

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name riboflavin kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1226: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1546	Riboflavin	

Modifiers

Table 1227: Properties of each modifier.

Id	Name	SBO
e_0008	ribF	0000460
s_0467	ATP	
s_1546	Riboflavin	
s_0421	ADP	
s_0863	FMN	

Products

Table 1228: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_0863	FMN	

Kinetic Law

Derived unit contains undeclared units

$$v_{306} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s}_0467]}{\text{ic}0467} \right) + \text{ep}1546 \cdot \left(\frac{[\text{s}_1546]}{\text{ic}1546} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s}_0421]}{\text{ic}0421} \right) + \text{ep}0863 \cdot \left(\frac{[\text{s}_0863]}{\text{ic}0863} \right) \right) \quad (613)$$

Table 1229: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229329 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229329 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1546			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0863			-1.000	dimensionless	<input checked="" type="checkbox"/>

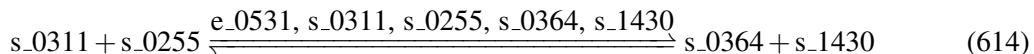
7.307 Reaction r_1265

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name riboflavin synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1230: Properties of each reactant.

Id	Name	SBO
s_0311	4-(1-D-Ribitylamino)-5-aminouracil	
s_0255	3,4-dihydroxy-2-butanone 4-phosphate	

Modifiers

Table 1231: Properties of each modifier.

Id	Name	SBO
e_0531	ribE	0000460
s_0311	4-(1-D-Ribitylamino)-5-aminouracil	
s_0255	3,4-dihydroxy-2-butanone 4-phosphate	
s_0364	6,7-Dimethyl-8-(1-D-ribityl)lumazine	
s_1430	Phosphate	

Products

Table 1232: Properties of each product.

Id	Name	SBO
s_0364	6,7-Dimethyl-8-(1-D-ribityl)lumazine	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{307} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0311 \cdot \left(\frac{[\text{s_0311}]}{\text{ic}0311} \right) + \text{ep}0255 \cdot \left(\frac{[\text{s_0255}]}{\text{ic}0255} \right) + \text{ep}0364 \cdot \left(\frac{[\text{s_0364}]}{\text{ic}0364} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic}1430} \right) \right) \quad (615)$$

Table 1233: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$1.23556926891731 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$1.23556926891731 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0311			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0255			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0364			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

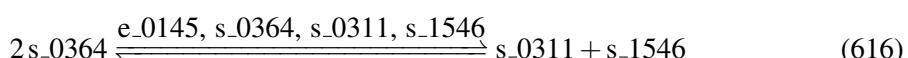
7.308 Reaction r_1266

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name riboflavin synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1234: Properties of each reactant.

Id	Name	SBO
s_0364	6,7-Dimethyl-8-(1-D-ribityl)lumazine	

Modifiers

Table 1235: Properties of each modifier.

Id	Name	SBO
e_0145	ribH	0000460
s_0364	6,7-Dimethyl-8-(1-D-ribityl)lumazine	
s_0311	4-(1-D-Ribitylamino)-5-aminouracil	
s_1546	Riboflavin	

Products

Table 1236: Properties of each product.

Id	Name	SBO
s_0311	4-(1-D-Ribitylamino)-5-aminouracil	
s_1546	Riboflavin	

Kinetic Law

Derived unit contains undeclared units

$$v_{308} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0364} \cdot \left(\frac{[\text{s}_0364]}{\text{ic0364}} \right) + \text{ep0311} \cdot \left(\frac{[\text{s}_0311]}{\text{ic0311}} \right) + \text{ep1546} \cdot \left(\frac{[\text{s}_1546]}{\text{ic1546}} \right) \right) \quad (617)$$

Table 1237: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0364			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0311			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1546			-1.000	dimensionless	<input checked="" type="checkbox"/>

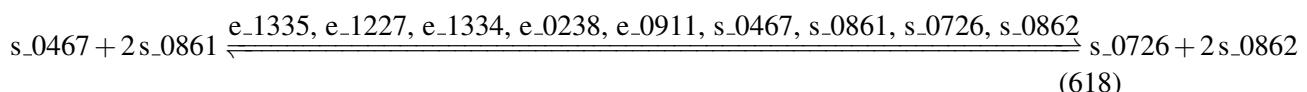
7.309 Reaction r_1276

This is a reversible reaction of two reactants forming two products influenced by nine modifiers.

Name ribonucleoside-triphosphate reductase (ATP) (flavodoxin)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1238: Properties of each reactant.

Id	Name	SBO
s_{_0467}	ATP	
s_{_0861}	Flavodoxin reduced	

Modifiers

Table 1239: Properties of each modifier.

Id	Name	SBO
e_{_1335}	nrdD	0000460
e_{_1227}	fpr	0000460
e_{_1334}	nrdG	0000460
e_{_0238}	fldA	0000460
e_{_0911}	fldB	0000460
s_{_0467}	ATP	
s_{_0861}	Flavodoxin reduced	
s_{_0726}	dATP	
s_{_0862}	flavodoxin semi oxidized	

Products

Table 1240: Properties of each product.

Id	Name	SBO
s_{_0726}	dATP	

Id	Name	SBO
s_0862	flavodoxin semi oxidized	

Kinetic Law

Derived unit contains undeclared units

$$v_{309} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0861} \cdot \left(\frac{[\text{s_0861}]}{\text{ic0861}} \right) + \text{ep0726} \cdot \left(\frac{[\text{s_0726}]}{\text{ic0726}} \right) + \text{ep0862} \cdot \left(\frac{[\text{s_0862}]}{\text{ic0862}} \right) \right) \quad (619)$$

Table 1241: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0861			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0726			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0862			-2.000	dimensionless	<input checked="" type="checkbox"/>

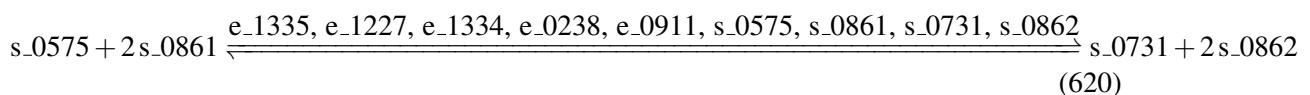
7.310 Reaction r_1277

This is a reversible reaction of two reactants forming two products influenced by nine modifiers.

Name ribonucleoside-triphosphate reductase (CTP) (flavodoxin)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1242: Properties of each reactant.

Id	Name	SBO
s_0575	CTP	

Id	Name	SBO
s_0861	Flavodoxin reduced	

Modifiers

Table 1243: Properties of each modifier.

Id	Name	SBO
e_1335	nrdD	0000460
e_1227	fpr	0000460
e_1334	nrdG	0000460
e_0238	fldA	0000460
e_0911	fldB	0000460
s_0575	CTP	
s_0861	Flavodoxin reduced	
s_0731	dCTP	
s_0862	flavodoxin semi oxidized	

Products

Table 1244: Properties of each product.

Id	Name	SBO
s_0731	dCTP	
s_0862	flavodoxin semi oxidized	

Kinetic Law

Derived unit contains undeclared units

$$v_{310} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0575} \cdot \left(\frac{[\text{s}_0575]}{\text{ic0575}} \right) + \text{ep0861} \cdot \left(\frac{[\text{s}_0861]}{\text{ic0861}} \right) + \text{ep0731} \cdot \left(\frac{[\text{s}_0731]}{\text{ic0731}} \right) + \text{ep0862} \cdot \left(\frac{[\text{s}_0862]}{\text{ic0862}} \right) \right) \quad (621)$$

Table 1245: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			0.004	mmol·l ⁻¹ ·s ⁻¹	<input checked="" type="checkbox"/>
ep0575			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0861			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0731			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0862			-2.000	dimensionless	<input checked="" type="checkbox"/>

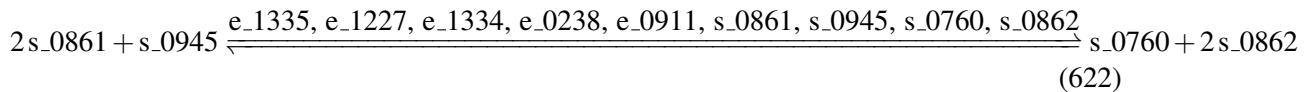
7.311 Reaction r_1278

This is a reversible reaction of two reactants forming two products influenced by nine modifiers.

Name ribonucleoside-triphosphate reductase (GTP) (flavodoxin)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1246: Properties of each reactant.

Id	Name	SBO
s_{_0861}	Flavodoxin reduced	
s_{_0945}	GTP	

Modifiers

Table 1247: Properties of each modifier.

Id	Name	SBO
e_{_1335}	nrdD	0000460
e_{_1227}	fpr	0000460
e_{_1334}	nrdG	0000460
e_{_0238}	fldA	0000460
e_{_0911}	fldB	0000460
s_{_0861}	Flavodoxin reduced	
s_{_0945}	GTP	
s_{_0760}	dGTP	
s_{_0862}	flavodoxin semi oxidized	

Products

Table 1248: Properties of each product.

Id	Name	SBO
s_0760	dGTP	
s_0862	flavodoxin semi oxidized	

Kinetic Law

Derived unit contains undeclared units

$$v_{311} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0861} \cdot \left(\frac{[\text{s}_0861]}{\text{ic0861}} \right) + \text{ep0945} \cdot \left(\frac{[\text{s}_0945]}{\text{ic0945}} \right) + \text{ep0760} \cdot \left(\frac{[\text{s}_0760]}{\text{ic0760}} \right) + \text{ep0862} \cdot \left(\frac{[\text{s}_0862]}{\text{ic0862}} \right) \right) \quad (623)$$

Table 1249: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0861			2.000	dimensionless	<input checked="" type="checkbox"/>
ep0945			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0760			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0862			-2.000	dimensionless	<input checked="" type="checkbox"/>

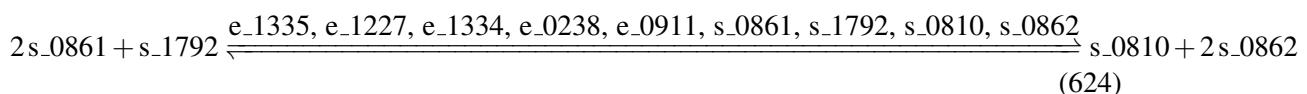
7.312 Reaction r_1279

This is a reversible reaction of two reactants forming two products influenced by nine modifiers.

Name ribonucleoside-triphosphate reductase (UTP) (flavodoxin)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1250: Properties of each reactant.

Id	Name	SBO
s_0861	Flavodoxin reduced	
s_1792	UTP	

Modifiers

Table 1251: Properties of each modifier.

Id	Name	SBO
e_1335	nrdD	0000460
e_1227	fpr	0000460
e_1334	nrdG	0000460
e_0238	fldA	0000460
e_0911	fldB	0000460
s_0861	Flavodoxin reduced	
s_1792	UTP	
s_0810	dUTP	
s_0862	flavodoxin semi oxidized	

Products

Table 1252: Properties of each product.

Id	Name	SBO
s_0810	dUTP	
s_0862	flavodoxin semi oxidized	

Kinetic Law

Derived unit contains undeclared units

$$v_{312} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0861 \cdot \left(\frac{[\text{s}_0861]}{\text{ic}0861} \right) + \text{ep}1792 \cdot \left(\frac{[\text{s}_1792]}{\text{ic}1792} \right) + \text{ep}0810 \cdot \left(\frac{[\text{s}_0810]}{\text{ic}0810} \right) + \text{ep}0862 \cdot \left(\frac{[\text{s}_0862]}{\text{ic}0862} \right) \right) \quad (625)$$

Table 1253: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0861			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1792			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0810			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0862			-2.000	dimensionless	<input checked="" type="checkbox"/>

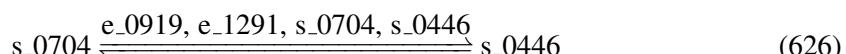
7.313 Reaction r_1284

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name ribose-5-phosphate isomerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1254: Properties of each reactant.

Id	Name	SBO
s_{-0704}	D-Ribulose 5-phosphate	

Modifiers

Table 1255: Properties of each modifier.

Id	Name	SBO
e_{-0919}	rpiA	0000460
e_{-1291}	rpiB	0000460
s_{-0704}	D-Ribulose 5-phosphate	
s_{-0446}	alpha-D-Ribose 5-phosphate	

Product

Table 1256: Properties of each product.

Id	Name	SBO
s_0446	alpha-D-Ribose 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{313} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0704} \cdot \left(\frac{[\text{s}_0704]}{\text{ic0704}} \right) + \text{ep0446} \cdot \left(\frac{[\text{s}_0446]}{\text{ic0446}} \right) \right) \quad (627)$$

Table 1257: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.102	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.102	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0704			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0446			-1.000	dimensionless	<input checked="" type="checkbox"/>

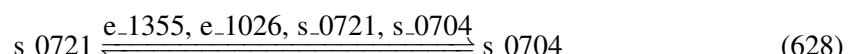
7.314 Reaction r_1285

This is a reversible reaction of one reactant forming one product influenced by four modifiers.

Name ribulose 5-phosphate 3-epimerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1258: Properties of each reactant.

Id	Name	SBO
s_0721	D-Xylulose 5-phosphate	

Modifiers

Table 1259: Properties of each modifier.

Id	Name	SBO
e_1355	sgcE	0000460
e_1026	rpe	0000460
s_0721	D-Xylulose 5-phosphate	
s_0704	D-Ribulose 5-phosphate	

Product

Table 1260: Properties of each product.

Id	Name	SBO
s_0704	D-Ribulose 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{314} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0721} \cdot \left(\frac{[\text{s}_0721]}{\text{ic0721}} \right) + \text{ep0704} \cdot \left(\frac{[\text{s}_0704]}{\text{ic0704}} \right) \right) \quad (629)$$

Table 1261: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.107	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.107	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0721			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0704			-1.000	dimensionless	<input checked="" type="checkbox"/>

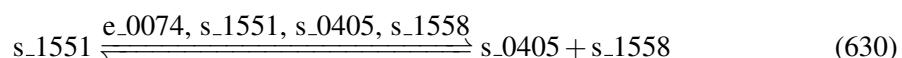
7.315 Reaction r_1288

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name S-adenosylhomocysteine nucleosidase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1262: Properties of each reactant.

Id	Name	SBO
s_1551	S-Adenosyl-L-homocysteine	

Modifiers

Table 1263: Properties of each modifier.

Id	Name	SBO
e_0074	mtnN	0000460
s_1551	S-Adenosyl-L-homocysteine	
s_0405	Adenine	
s_1558	S-Ribosyl-L-homocysteine	

Products

Table 1264: Properties of each product.

Id	Name	SBO
s_0405	Adenine	
s_1558	S-Ribosyl-L-homocysteine	

Kinetic Law

Derived unit contains undeclared units

$$v_{315} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1551} \cdot \left(\frac{[\text{s_1551}]}{\text{ic1551}} \right) + \text{ep0405} \cdot \left(\frac{[\text{s_0405}]}{\text{ic0405}} \right) + \text{ep1558} \cdot \left(\frac{[\text{s_1558}]}{\text{ic1558}} \right) \right) \quad (631)$$

Table 1265: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1551			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0405			-1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1558			-1.000	dimensionless	<input checked="" type="checkbox"/>

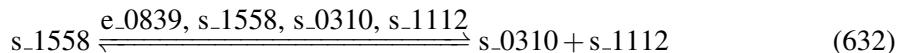
7.316 Reaction r_1291

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name S-ribosylhomocysteine cleavage enzyme

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1266: Properties of each reactant.

Id	Name	SBO
s_1558	S-Ribosyl-L-homocysteine	

Modifiers

Table 1267: Properties of each modifier.

Id	Name	SBO
e_0839	luxS	0000460
s_1558	S-Ribosyl-L-homocysteine	
s_0310	4,5-dihydroxy-2,3-pentanedione	
s_1112	L-Homocysteine	

Products

Table 1268: Properties of each product.

Id	Name	SBO
s_0310	4,5-dihydroxy-2,3-pentanedione	
s_1112	L-Homocysteine	

Kinetic Law

Derived unit contains undeclared units

$$v_{316} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1558} \cdot \left(\frac{[\text{s_1558}]}{\text{ic1558}} \right) + \text{ep0310} \cdot \left(\frac{[\text{s_0310}]}{\text{ic0310}} \right) + \text{ep1112} \cdot \left(\frac{[\text{s_1112}]}{\text{ic1112}} \right) \right) \quad (633)$$

Table 1269: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1558			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0310			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1112			-1.000	dimensionless	<input checked="" type="checkbox"/>

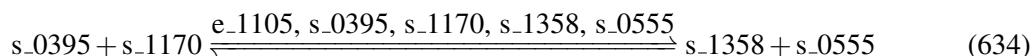
7.317 Reaction r_1301

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name serine O-acetyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1270: Properties of each reactant.

Id	Name	SBO
s_0395	Acetyl-CoA	
s_1170	L-Serine	

Modifiers

Table 1271: Properties of each modifier.

Id	Name	SBO
e_1105	cysE	0000460
s_0395	Acetyl-CoA	
s_1170	L-Serine	
s_1358	O-Acetyl-L-serine	
s_0555	Coenzyme A	

Products

Table 1272: Properties of each product.

Id	Name	SBO
s_1358	O-Acetyl-L-serine	
s_0555	Coenzyme A	

Kinetic Law

Derived unit contains undeclared units

$$v_{317} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0395 \cdot \left(\frac{[\text{s}_0395]}{\text{ic}0395} \right) + \text{ep}1170 \cdot \left(\frac{[\text{s}_1170]}{\text{ic}1170} \right) + \text{ep}1358 \cdot \left(\frac{[\text{s}_1358]}{\text{ic}1358} \right) + \text{ep}0555 \cdot \left(\frac{[\text{s}_0555]}{\text{ic}0555} \right) \right) \quad (635)$$

Table 1273: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0395			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1170			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1358			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>

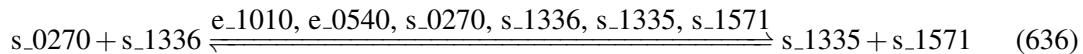
7.318 Reaction r_1304

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name shikimate dehydrogenase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1274: Properties of each reactant.

Id	Name	SBO
s_0270	3-Dehydroshikimate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 1275: Properties of each modifier.

Id	Name	SBO
e_1010	aroE	0000460
e_0540	ydiB	0000460
s_0270	3-Dehydroshikimate	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1571	Shikimate	

Products

Table 1276: Properties of each product.

Id	Name	SBO
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1571	Shikimate	

Kinetic Law

Derived unit contains undeclared units

$$v_{318} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0270} \cdot \left(\frac{[\text{s_0270}]}{\text{ic0270}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) + \text{ep1571} \cdot \left(\frac{[\text{s_1571}]}{\text{ic1571}} \right) \right) \quad (637)$$

Table 1277: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0270			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1571			-1.000	dimensionless	<input checked="" type="checkbox"/>

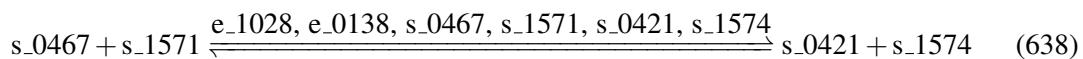
7.319 Reaction r_1305

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name shikimate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1278: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1571	Shikimate	

Modifiers

Table 1279: Properties of each modifier.

Id	Name	SBO
e_1028	aroK	0000460
e_0138	aroL	0000460
s_0467	ATP	
s_1571	Shikimate	
s_0421	ADP	
s_1574	Shikimate 5-phosphate	

Products

Table 1280: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1574	Shikimate 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{319} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s}_0467]}{\text{ic0467}} \right) + \text{ep1571} \cdot \left(\frac{[\text{s}_1571]}{\text{ic1571}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s}_0421]}{\text{ic0421}} \right) + \text{ep1574} \cdot \left(\frac{[\text{s}_1574]}{\text{ic1574}} \right) \right) \quad (639)$$

Table 1281: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.053	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1571			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1574			-1.000	dimensionless	<input checked="" type="checkbox"/>

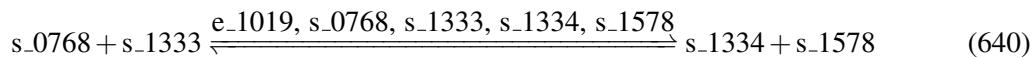
7.320 Reaction r_1306

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name sirohydrochlorin dehydrogenase (NAD)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1282: Properties of each reactant.

Id	Name	SBO
s_0768	dihydrosirohydrochlorin	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 1283: Properties of each modifier.

Id	Name	SBO
e_1019	cysG	0000460
s_0768	dihydrosirohydrochlorin	
s_1333	Nicotinamide adenine dinucleotide	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1578	sirohydrochlorin	

Products

Table 1284: Properties of each product.

Id	Name	SBO
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1578	sirohydrochlorin	

Kinetic Law

Derived unit contains undeclared units

$$v_{320} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0768} \cdot \left(\frac{[\text{s_0768}]}{\text{ic0768}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep1578} \cdot \left(\frac{[\text{s_1578}]}{\text{ic1578}} \right) \right) \quad (641)$$

Table 1285: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0768			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1578			-1.000	dimensionless	<input checked="" type="checkbox"/>

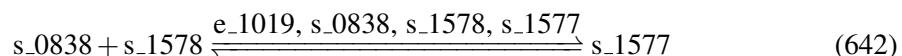
7.321 Reaction r_1307

This is a reversible reaction of two reactants forming one product influenced by four modifiers.

Name sirohydrochlorin ferrochelatase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1286: Properties of each reactant.

Id	Name	SBO
s_0838	Fe2+	
s_1578	sirohydrochlorin	

Modifiers

Table 1287: Properties of each modifier.

Id	Name	SBO
e_1019	cysG	0000460
s_0838	Fe2+	
s_1578	sirohydrochlorin	
s_1577	Siroheme	

Product

Table 1288: Properties of each product.

Id	Name	SBO
s_1577	Siroheme	

Kinetic Law

Derived unit contains undeclared units

$$v_{321} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0838} \cdot \left(\frac{[\text{s}_0838]}{\text{ic0838}} \right) + \text{ep1578} \cdot \left(\frac{[\text{s}_1578]}{\text{ic1578}} \right) + \text{ep1577} \cdot \left(\frac{[\text{s}_1577]}{\text{ic1577}} \right) \right) \quad (643)$$

Table 1289: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0838			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1578			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1577			-1.000	dimensionless	<input checked="" type="checkbox"/>

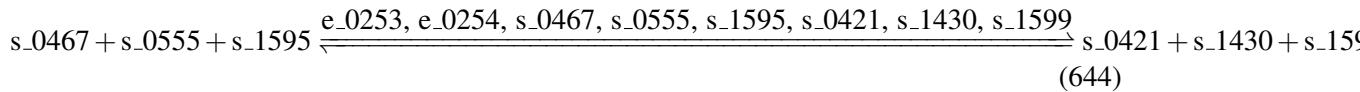
7.322 Reaction r_1315

This is a reversible reaction of three reactants forming three products influenced by eight modifiers.

Name succinyl-CoA synthetase (ADP-forming)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1290: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0555	Coenzyme A	
s_1595	Succinate	

Modifiers

Table 1291: Properties of each modifier.

Id	Name	SBO
e_0253	sucC	0000460
e_0254	sucD	0000460
s_0467	ATP	
s_0555	Coenzyme A	
s_1595	Succinate	
s_0421	ADP	
s_1430	Phosphate	
s_1599	Succinyl-CoA	

Products

Table 1292: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1430	Phosphate	
s_1599	Succinyl-CoA	

Kinetic Law

Derived unit contains undeclared units

$$v_{322} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s_0467}]}{\text{ic}0467} \right) + \text{ep}0555 \cdot \left(\frac{[\text{s_0555}]}{\text{ic}0555} \right) + \text{ep}1595 \cdot \left(\frac{[\text{s_1595}]}{\text{ic}1595} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s_0421}]}{\text{ic}0421} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s_1430}]}{\text{ic}1430} \right) + \text{ep}1599 \cdot \left(\frac{[\text{s_1599}]}{\text{ic}1599} \right) \right) \quad (645)$$

Table 1293: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.073	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.073	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1595			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1599			-1.000	dimensionless	<input checked="" type="checkbox"/>

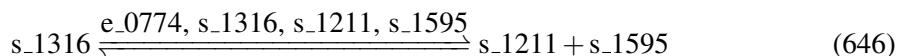
7.323 Reaction r_1316

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name succinyl-diaminopimelate desuccinylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1294: Properties of each reactant.

Id	Name	SBO
s_1316	N-Succinyl-LL-2,6-diaminoheptanedioate	

Modifiers

Table 1295: Properties of each modifier.

Id	Name	SBO
e_0774	dapE	0000460
s_1316	N-Succinyl-LL-2,6-diaminoheptanedioate	
s_1211	LL-2,6-Diaminoheptanedioate	
s_1595	Succinate	

Products

Table 1296: Properties of each product.

Id	Name	SBO
s_1211	LL-2,6-Diaminoheptanedioate	
s_1595	Succinate	

Kinetic Law

Derived unit contains undeclared units

$$v_{323} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1316} \cdot \left(\frac{[\text{s}_1316]}{\text{ic1316}} \right) + \text{ep1211} \cdot \left(\frac{[\text{s}_1211]}{\text{ic1211}} \right) + \text{ep1595} \cdot \left(\frac{[\text{s}_1595]}{\text{ic1595}} \right) \right) \quad (647)$$

Table 1297: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1316			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1211			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1595			-1.000	dimensionless	<input checked="" type="checkbox"/>

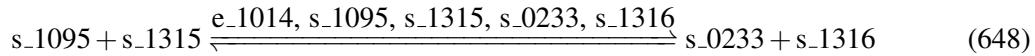
7.324 Reaction r_1318

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name succinylaminopimelate transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1298: Properties of each reactant.

Id	Name	SBO
s_{_1095}	L-Glutamate	
s_{_1315}	N-Succinyl-2-L-amino-6-oxoheptanedioate	

Modifiers

Table 1299: Properties of each modifier.

Id	Name	SBO
e_{_1014}	argD	0000460
s_{_1095}	L-Glutamate	
s_{_1315}	N-Succinyl-2-L-amino-6-oxoheptanedioate	
s_{_0233}	2-Oxoglutarate	
s_{_1316}	N-Succinyl-LL-2,6-diaminoheptanedioate	

Products

Table 1300: Properties of each product.

Id	Name	SBO
s_{_0233}	2-Oxoglutarate	
s_{_1316}	N-Succinyl-LL-2,6-diaminoheptanedioate	

Kinetic Law

Derived unit contains undeclared units

$$v_{324} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1095} \cdot \left(\frac{[s_{_1095}]}{\text{ic1095}} \right) + \text{ep1315} \cdot \left(\frac{[s_{_1315}]}{\text{ic1315}} \right) + \text{ep0233} \cdot \left(\frac{[s_{_0233}]}{\text{ic0233}} \right) + \text{ep1316} \cdot \left(\frac{[s_{_1316}]}{\text{ic1316}} \right) \right) \quad (649)$$

Table 1301: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1315			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1316			-1.000	dimensionless	<input checked="" type="checkbox"/>

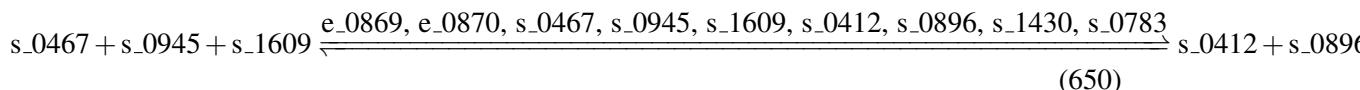
7.325 Reaction r_1329

This is a reversible reaction of three reactants forming four products influenced by nine modifiers.

Name Sulfate adenylyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1302: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0945	GTP	
s_1609	Sulfate	

Modifiers

Table 1303: Properties of each modifier.

Id	Name	SBO
e_0869	cysN	0000460
e_0870	cysD	0000460
s_0467	ATP	
s_0945	GTP	

Id	Name	SBO
s_1609	Sulfate	
s_0412	Adenosine 5'-phosphosulfate	
s_0896	GDP	
s_1430	Phosphate	
s_0783	Diphosphate	

Products

Table 1304: Properties of each product.

Id	Name	SBO
s_0412	Adenosine 5'-phosphosulfate	
s_0896	GDP	
s_1430	Phosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{325} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0945} \cdot \left(\frac{[\text{s_0945}]}{\text{ic0945}} \right) + \text{ep1609} \cdot \left(\frac{[\text{s_1609}]}{\text{ic1609}} \right) + \text{ep0412} \cdot \left(\frac{[\text{s_0412}]}{\text{ic0412}} \right) + \text{ep0896} \cdot \left(\frac{[\text{s_0896}]}{\text{ic0896}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \right) \quad (651)$$

Table 1305: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0945			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1609			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0412			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0896			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

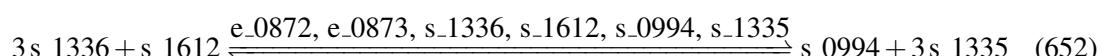
7.326 Reaction r_1330

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name sulfite reductase (NADPH2)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1306: Properties of each reactant.

Id	Name	SBO
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1612	Sulfite	

Modifiers

Table 1307: Properties of each modifier.

Id	Name	SBO
e_0872	cysI	0000460
e_0873	cysJ	0000460
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1612	Sulfite	
s_0994	Hydrogen sulfide	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 1308: Properties of each product.

Id	Name	SBO
s_0994	Hydrogen sulfide	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{326} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep1612} \cdot \left(\frac{[\text{s_1612}]}{\text{ic1612}} \right) + \text{ep0994} \cdot \left(\frac{[\text{s_0994}]}{\text{ic0994}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) \right) \quad (653)$$

Table 1309: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1336			3.000	dimensionless	<input checked="" type="checkbox"/>
ep1612			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0994			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-3.000	dimensionless	<input checked="" type="checkbox"/>

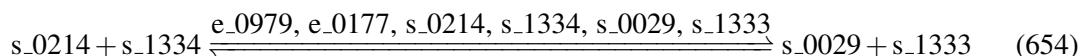
7.327 Reaction r_1335

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name tartronate semialdehyde reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1310: Properties of each reactant.

Id	Name	SBO
s_0214	2-Hydroxy-3-oxopropanoate	
s_1334	Nicotinamide adenine dinucleotide - reduced	

Modifiers

Table 1311: Properties of each modifier.

Id	Name	SBO
e_0979	garR	0000460
e_0177	glxR	0000460
s_0214	2-Hydroxy-3-oxopropanoate	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_0029	(R)-Glycerate	
s_1333	Nicotinamide adenine dinucleotide	

Products

Table 1312: Properties of each product.

Id	Name	SBO
s_0029	(R)-Glycerate	
s_1333	Nicotinamide adenine dinucleotide	

Kinetic Law

Derived unit contains undeclared units

$$v_{327} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0214 \cdot \left(\frac{[\text{s}_0214]}{\text{ic}0214} \right) + \text{ep}1334 \cdot \left(\frac{[\text{s}_1334]}{\text{ic}1334} \right) + \text{ep}0029 \cdot \left(\frac{[\text{s}_0029]}{\text{ic}0029} \right) + \text{ep}1333 \cdot \left(\frac{[\text{s}_1333]}{\text{ic}1333} \right) \right) \quad (655)$$

Table 1313: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.63338474645892 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.63338474645892 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0214			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0029			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>

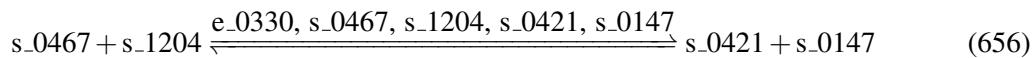
7.328 Reaction r_1337

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Tetraacyldisaccharide 4'kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1314: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1204	Lipid A Disaccharide	

Modifiers

Table 1315: Properties of each modifier.

Id	Name
e_0330	lpkX
s_0467	ATP
s_1204	Lipid A Disaccharide
s_0421	ADP
s_0147	2,3,2'3'-Tetrakis(beta-hydroxymyristoyl)-D-glucosaminyl-1,6-beta-D-glucosamine 1,4'-bisphosphate

Products

Table 1316: Properties of each product.

Id	Name
s_0421	ADP
s_0147	2,3,2'3'-Tetrakis(beta-hydroxymyristoyl)-D-glucosaminyl-1,6-beta-D-glucosamine 1,4'-bisphosphate

Kinetic Law

Derived unit contains undeclared units

$$v_{328} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1204} \cdot \left(\frac{[\text{s_1204}]}{\text{ic1204}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep0147} \cdot \left(\frac{[\text{s_0147}]}{\text{ic0147}} \right) \right) \quad (657)$$

Table 1317: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1204			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0147			-1.000	dimensionless	<input checked="" type="checkbox"/>

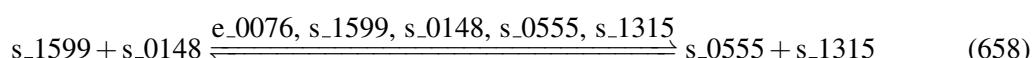
7.329 Reaction r_1338

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name tetrahydrodipicolinate succinylase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1318: Properties of each reactant.

Id	Name	SBO
s_1599	Succinyl-CoA	
s_0148	2,3,4,5-Tetrahydrodipicolinate	

Modifiers

Table 1319: Properties of each modifier.

Id	Name	SBO
e_0076	dapD	0000460
s_1599	Succinyl-CoA	
s_0148	2,3,4,5-Tetrahydrodipicolinate	
s_0555	Coenzyme A	
s_1315	N-Succinyl-2-L-amino-6-oxoheptanedioate	

Products

Table 1320: Properties of each product.

Id	Name	SBO
s_0555	Coenzyme A	
s_1315	N-Succinyl-2-L-amino-6-oxoheptanedioate	

Kinetic Law

Derived unit contains undeclared units

$$v_{329} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1599} \cdot \left(\frac{[\text{s}_1599]}{\text{ic1599}} \right) + \text{ep0148} \cdot \left(\frac{[\text{s}_0148]}{\text{ic0148}} \right) + \text{ep0555} \cdot \left(\frac{[\text{s}_0555]}{\text{ic0555}} \right) + \text{ep1315} \cdot \left(\frac{[\text{s}_1315]}{\text{ic1315}} \right) \right) \quad (659)$$

Table 1321: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.051	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1599			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0148			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0555			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1315			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.330 Reaction r_1344

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name thiamine-phosphate diphosphorylase

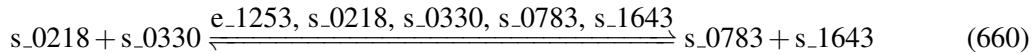
SBO:0000176 biochemical reaction**Reaction equation****Reactants**

Table 1322: Properties of each reactant.

Id	Name	SBO
s_{_0218}	2-Methyl-4-amino-5-hydroxymethylpyrimidine diphosphate	
s_{_0330}	4-Methyl-5-(2-phosphoethyl)-thiazole	

Modifiers

Table 1323: Properties of each modifier.

Id	Name	SBO
e_{_1253}	thiE	0000460
s_{_0218}	2-Methyl-4-amino-5-hydroxymethylpyrimidine diphosphate	
s_{_0330}	4-Methyl-5-(2-phosphoethyl)-thiazole	
s_{_0783}	Diphosphate	
s_{_1643}	Thiamin monophosphate	

Products

Table 1324: Properties of each product.

Id	Name	SBO
s_{_0783}	Diphosphate	
s_{_1643}	Thiamin monophosphate	

Kinetic Law**Derived unit** contains undeclared units

$$v_{330} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0218} \cdot \left(\frac{[s_{_0218}]}{\text{ic0218}} \right) + \text{ep0330} \cdot \left(\frac{[s_{_0330}]}{\text{ic0330}} \right) + \text{ep0783} \cdot \left(\frac{[s_{_0783}]}{\text{ic0783}} \right) + \text{ep1643} \cdot \left(\frac{[s_{_1643}]}{\text{ic1643}} \right) \right) \quad (661)$$

Table 1325: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0218			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0330			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1643			-1.000	dimensionless	<input checked="" type="checkbox"/>

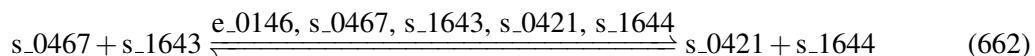
7.331 Reaction r_1345

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name thiamine-phosphate kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1326: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1643	Thiamin monophosphate	

Modifiers

Table 1327: Properties of each modifier.

Id	Name	SBO
e_0146	thiL	0000460
s_0467	ATP	
s_1643	Thiamin monophosphate	
s_0421	ADP	
s_1644	Thiamine diphosphate	

Products

Table 1328: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1644	Thiamine diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{331} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1643} \cdot \left(\frac{[\text{s_1643}]}{\text{ic1643}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1644} \cdot \left(\frac{[\text{s_1644}]}{\text{ic1644}} \right) \right) \quad (663)$$

Table 1329: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1643			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1644			-1.000	dimensionless	<input checked="" type="checkbox"/>

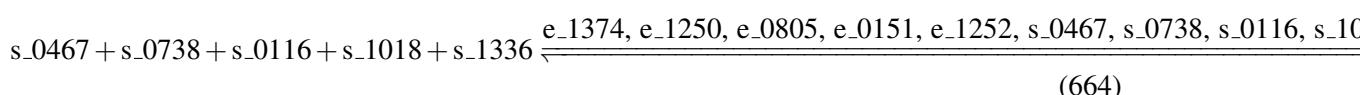
7.332 Reaction r_1346

This is a reversible reaction of five reactants forming six products influenced by 16 modifiers.

Name thiazole phosphate synthesis

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1330: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0738	dehydroglycine	
s_0116	1-deoxy-D-xylulose 5-phosphate	
s_1018	IscS with bound sulfur	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Modifiers

Table 1331: Properties of each modifier.

Id	Name	SBO
e_1374	thiS	0000460
e_1250	thiH	0000460
e_0805	iscS	0000460
e_0151	thiI	0000460
e_1252	thiF	0000460
s_0467	ATP	
s_0738	dehydroglycine	
s_0116	1-deoxy-D-xylulose 5-phosphate	
s_1018	IscS with bound sulfur	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_0330	4-Methyl-5-(2-phosphoethyl)-thiazole	
s_0454	AMP	
s_0543	CO2	
s_1017	IscS sulfur acceptor protein	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0783	Diphosphate	

Products

Table 1332: Properties of each product.

Id	Name	SBO
s_0330	4-Methyl-5-(2-phosphoethyl)-thiazole	
s_0454	AMP	
s_0543	CO2	
s_1017	IscS sulfur acceptor protein	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_0783	Diphosphate	

Id	Name	SBO
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Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned}
 v_{332} = & \text{vol(cell)} \cdot v0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0738} \cdot \left(\frac{[\text{s_0738}]}{\text{ic0738}} \right) + \text{ep0116} \right. \\
 & \cdot \left(\frac{[\text{s_0116}]}{\text{ic0116}} \right) + \text{ep1018} \cdot \left(\frac{[\text{s_1018}]}{\text{ic1018}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep0330} \cdot \left(\frac{[\text{s_0330}]}{\text{ic0330}} \right) \\
 & + \text{ep0454} \cdot \left(\frac{[\text{s_0454}]}{\text{ic0454}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep1017} \cdot \left(\frac{[\text{s_1017}]}{\text{ic1017}} \right) + \text{ep1335} \\
 & \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) \Big) \\
 & \quad (665)
 \end{aligned}$$

Table 1333: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0738			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0116			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1018			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0330			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0454			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1017			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>

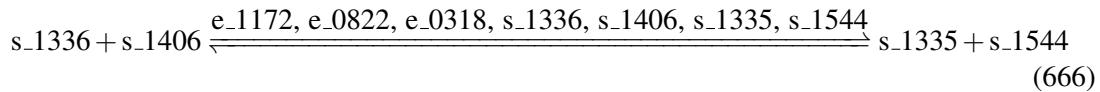
7.333 Reaction r_1347

This is a reversible reaction of two reactants forming two products influenced by seven modifiers.

Name thioredoxin reductase (NADPH)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1334: Properties of each reactant.

Id	Name	SBO
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1406	Oxidized thioredoxin	

Modifiers

Table 1335: Properties of each modifier.

Id	Name	SBO
e_1172	trxA	0000460
e_0822	trxC	0000460
e_0318	trxB	0000460
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1406	Oxidized thioredoxin	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1544	Reduced thioredoxin	

Products

Table 1336: Properties of each product.

Id	Name	SBO
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1544	Reduced thioredoxin	

Kinetic Law

Derived unit contains undeclared units

$$v_{333} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep1406} \cdot \left(\frac{[\text{s_1406}]}{\text{ic1406}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) + \text{ep1544} \cdot \left(\frac{[\text{s_1544}]}{\text{ic1544}} \right) \right) \quad (667)$$

Table 1337: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.034	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1406			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1544			-1.000	dimensionless	<input checked="" type="checkbox"/>

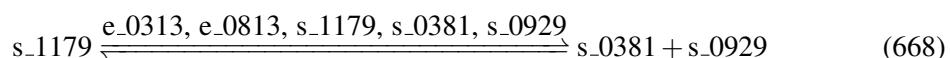
7.334 Reaction r_1348

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name Threonine aldolase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1338: Properties of each reactant.

Id	Name	SBO
s_1179	L-Threonine	

Modifiers

Table 1339: Properties of each modifier.

Id	Name	SBO
e_0313	ltaE	0000460

Id	Name	SBO
e_0813	glyA	0000460
s_1179	L-Threonine	
s_0381	Acetaldehyde	
s_0929	Glycine	

Products

Table 1340: Properties of each product.

Id	Name	SBO
s_0381	Acetaldehyde	
s_0929	Glycine	

Kinetic Law

Derived unit contains undeclared units

$$v_{334} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1179} \cdot \left(\frac{[\text{s}_1179]}{\text{ic1179}} \right) + \text{ep0381} \cdot \left(\frac{[\text{s}_0381]}{\text{ic0381}} \right) + \text{ep0929} \cdot \left(\frac{[\text{s}_0929]}{\text{ic0929}} \right) \right) \quad (669)$$

Table 1341: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.041	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1179			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0381			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0929			-1.000	dimensionless	<input checked="" type="checkbox"/>

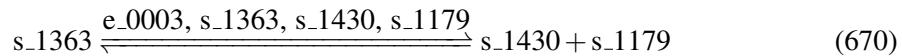
7.335 Reaction r_1349

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name threonine synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1342: Properties of each reactant.

Id	Name	SBO
s_{_1363}	O-Phospho-L-homoserine	

Modifiers

Table 1343: Properties of each modifier.

Id	Name	SBO
e_{_0003}	thrC	0000460
s_{_1363}	O-Phospho-L-homoserine	
s_{_1430}	Phosphate	
s_{_1179}	L-Threonine	

Products

Table 1344: Properties of each product.

Id	Name	SBO
s_{_1430}	Phosphate	
s_{_1179}	L-Threonine	

Kinetic Law

Derived unit contains undeclared units

$$v_{335} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1363} \cdot \left(\frac{[s_{_1363}]}{\text{ic1363}} \right) + \text{ep1430} \cdot \left(\frac{[s_{_1430}]}{\text{ic1430}} \right) + \text{ep1179} \cdot \left(\frac{[s_{_1179}]}{\text{ic1179}} \right) \right) \quad (671)$$

Table 1345: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.158	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.158	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1363			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1179			-1.000	dimensionless	<input checked="" type="checkbox"/>

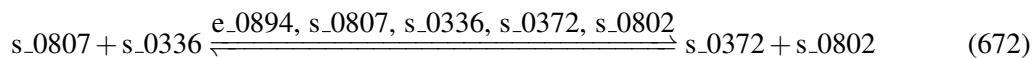
7.336 Reaction r_1353

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name thymidylate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1346: Properties of each reactant.

Id	Name	SBO
s_0807	dUMP	
s_0336	5,10-Methylenetetrahydrofolate	

Modifiers

Table 1347: Properties of each modifier.

Id	Name	SBO
e_0894	thyA	0000460
s_0807	dUMP	
s_0336	5,10-Methylenetetrahydrofolate	
s_0372	7,8-Dihydrofolate	
s_0802	dTMP	

Products

Table 1348: Properties of each product.

Id	Name	SBO
s_0372	7,8-Dihydrofolate	
s_0802	dTMP	

Kinetic Law

Derived unit contains undeclared units

$$v_{336} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0807} \cdot \left(\frac{[\text{s_0807}]}{\text{ic0807}} \right) + \text{ep0336} \cdot \left(\frac{[\text{s_0336}]}{\text{ic0336}} \right) + \text{ep0372} \cdot \left(\frac{[\text{s_0372}]}{\text{ic0372}} \right) + \text{ep0802} \cdot \left(\frac{[\text{s_0802}]}{\text{ic0802}} \right) \right) \quad (673)$$

Table 1349: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0807			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0372			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0802			-1.000	dimensionless	<input checked="" type="checkbox"/>

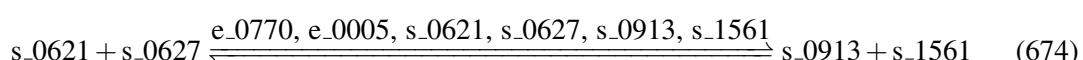
7.337 Reaction r_1356

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name transaldolase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1350: Properties of each reactant.

Id	Name	SBO
s_0621	D-Erythrose 4-phosphate	
s_0627	D-Fructose 6-phosphate	

Modifiers

Table 1351: Properties of each modifier.

Id	Name	SBO
e_0770	talA	0000460
e_0005	talB	0000460
s_0621	D-Erythrose 4-phosphate	
s_0627	D-Fructose 6-phosphate	
s_0913	Glyceraldehyde 3-phosphate	
s_1561	Sedoheptulose 7-phosphate	

Products

Table 1352: Properties of each product.

Id	Name	SBO
s_0913	Glyceraldehyde 3-phosphate	
s_1561	Sedoheptulose 7-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{337} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0621} \cdot \left(\frac{[\text{s}_0621]}{\text{ic0621}} \right) + \text{ep0627} \cdot \left(\frac{[\text{s}_0627]}{\text{ic0627}} \right) + \text{ep0913} \cdot \left(\frac{[\text{s}_0913]}{\text{ic0913}} \right) + \text{ep1561} \cdot \left(\frac{[\text{s}_1561]}{\text{ic1561}} \right) \right) \quad (675)$$

Table 1353: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.027	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.027	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0621			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0627			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0913			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1561			-1.000	dimensionless	<input checked="" type="checkbox"/>

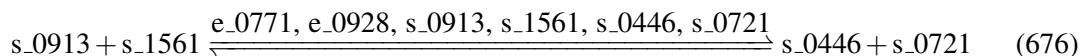
7.338 Reaction r_1357

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name transketolase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1354: Properties of each reactant.

Id	Name	SBO
s_{_0913}	Glyceraldehyde 3-phosphate	
s_{_1561}	Sedoheptulose 7-phosphate	

Modifiers

Table 1355: Properties of each modifier.

Id	Name	SBO
e_{_0771}	tktB	0000460
e_{_0928}	tktA	0000460
s_{_0913}	Glyceraldehyde 3-phosphate	
s_{_1561}	Sedoheptulose 7-phosphate	
s_{_0446}	alpha-D-Ribose 5-phosphate	
s_{_0721}	D-Xylulose 5-phosphate	

Products

Table 1356: Properties of each product.

Id	Name	SBO
s_0446	alpha-D-Ribose 5-phosphate	
s_0721	D-Xylulose 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{338} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0913} \cdot \left(\frac{[\text{s_0913}]}{\text{ic0913}} \right) + \text{ep1561} \cdot \left(\frac{[\text{s_1561}]}{\text{ic1561}} \right) + \text{ep0446} \cdot \left(\frac{[\text{s_0446}]}{\text{ic0446}} \right) + \text{ep0721} \cdot \left(\frac{[\text{s_0721}]}{\text{ic0721}} \right) \right) \quad (677)$$

Table 1357: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.027	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.027	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0913			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1561			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0446			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0721			-1.000	dimensionless	<input checked="" type="checkbox"/>

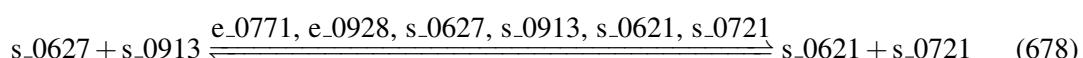
7.339 Reaction r_1358

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name transketolase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1358: Properties of each reactant.

Id	Name	SBO
s_0627	D-Fructose 6-phosphate	
s_0913	Glyceraldehyde 3-phosphate	

Modifiers

Table 1359: Properties of each modifier.

Id	Name	SBO
e_0771	tktB	0000460
e_0928	tktA	0000460
s_0627	D-Fructose 6-phosphate	
s_0913	Glyceraldehyde 3-phosphate	
s_0621	D-Erythrose 4-phosphate	
s_0721	D-Xylulose 5-phosphate	

Products

Table 1360: Properties of each product.

Id	Name	SBO
s_0621	D-Erythrose 4-phosphate	
s_0721	D-Xylulose 5-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{339} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0627} \cdot \left(\frac{[\text{s}_0627]}{\text{ic0627}} \right) + \text{ep0913} \cdot \left(\frac{[\text{s}_0913]}{\text{ic0913}} \right) + \text{ep0621} \cdot \left(\frac{[\text{s}_0621]}{\text{ic0621}} \right) + \text{ep0721} \cdot \left(\frac{[\text{s}_0721]}{\text{ic0721}} \right) \right) \quad (679)$$

Table 1361: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.080	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.080	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0627			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0913			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0621			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0721			-1.000	dimensionless	<input checked="" type="checkbox"/>

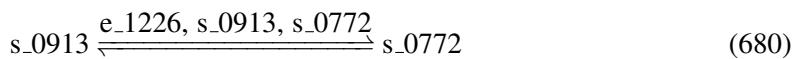
7.340 Reaction r_1363

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name triose-phosphate isomerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1362: Properties of each reactant.

Id	Name	SBO
s_{_0913}	Glyceraldehyde 3-phosphate	

Modifiers

Table 1363: Properties of each modifier.

Id	Name	SBO
e_{_1226}	tpiA	0000460
s_{_0913}	Glyceraldehyde 3-phosphate	
s_{_0772}	Dihydroxyacetone phosphate	

Product

Table 1364: Properties of each product.

Id	Name	SBO
s_{_0772}	Dihydroxyacetone phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{340} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0913} \cdot \left(\frac{[\text{s_0913}]}{\text{ic0913}} \right) + \text{ep0772} \cdot \left(\frac{[\text{s_0772}]}{\text{ic0772}} \right) \right) \quad (681)$$

Table 1365: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.020	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.020	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0913			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0772			-1.000	dimensionless	<input checked="" type="checkbox"/>

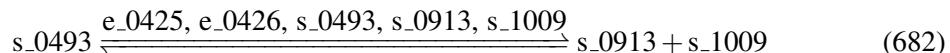
7.341 Reaction r_1367

This is a reversible reaction of one reactant forming two products influenced by five modifiers.

Name tryptophan synthase (indoleglycerol phosphate)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1366: Properties of each reactant.

Id	Name	SBO
s_0493	C'-(3-Indolyl)-glycerol 3-phosphate	

Modifiers

Table 1367: Properties of each modifier.

Id	Name	SBO
e_0425	trpA	0000460
e_0426	trpB	0000460

Id	Name	SBO
s_0493	C’-(3-Indolyl)-glycerol 3-phosphate	
s_0913	Glyceraldehyde 3-phosphate	
s_1009	Indole	

Products

Table 1368: Properties of each product.

Id	Name	SBO
s_0913	Glyceraldehyde 3-phosphate	
s_1009	Indole	

Kinetic Law

Derived unit contains undeclared units

$$v_{341} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0493} \cdot \left(\frac{[\text{s_0493}]}{\text{ic0493}} \right) + \text{ep0913} \cdot \left(\frac{[\text{s_0913}]}{\text{ic0913}} \right) + \text{ep1009} \cdot \left(\frac{[\text{s_1009}]}{\text{ic1009}} \right) \right) \quad (683)$$

Table 1369: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0493			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0913			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1009			-1.000	dimensionless	<input checked="" type="checkbox"/>

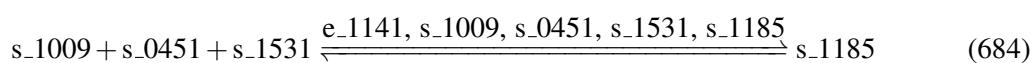
7.342 Reaction r_1368

This is a reversible reaction of three reactants forming one product influenced by five modifiers.

Name Tryptophanase (L-tryptophan)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1370: Properties of each reactant.

Id	Name	SBO
s_1009	Indole	
s_0451	Ammonium	
s_1531	Pyruvate	

Modifiers

Table 1371: Properties of each modifier.

Id	Name	SBO
e_1141	tnaA	0000460
s_1009	Indole	
s_0451	Ammonium	
s_1531	Pyruvate	
s_1185	L-Tryptophan	

Product

Table 1372: Properties of each product.

Id	Name	SBO
s_1185	L-Tryptophan	

Kinetic Law

Derived unit contains undeclared units

$$v_{342} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1009} \cdot \left(\frac{[\text{s}_1009]}{\text{ic1009}} \right) + \text{ep0451} \cdot \left(\frac{[\text{s}_0451]}{\text{ic0451}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s}_1531]}{\text{ic1531}} \right) + \text{ep1185} \cdot \left(\frac{[\text{s}_1185]}{\text{ic1185}} \right) \right) \quad (685)$$

Table 1373: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			0.008	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1009			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1185			-1.000	dimensionless	<input checked="" type="checkbox"/>

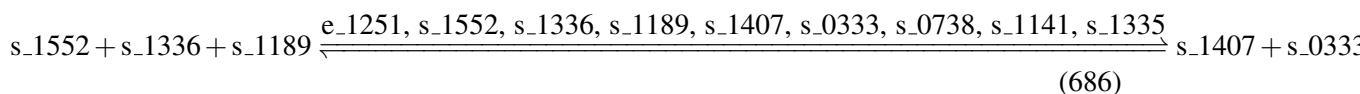
7.343 Reaction r_1375

This is a reversible reaction of three reactants forming five products influenced by nine modifiers.

Name tyrosine lyase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1374: Properties of each reactant.

Id	Name	SBO
s_1552	S-Adenosyl-L-methionine	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1189	L-Tyrosine	

Modifiers

Table 1375: Properties of each modifier.

Id	Name	SBO
e_1251	thiG	0000460
s_1552	S-Adenosyl-L-methionine	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1189	L-Tyrosine	
s_1407	p-Cresol	
s_0333	5'-Deoxyadenosine	
s_0738	dehydroglycine	
s_1141	L-Methionine	

Id	Name	SBO
s_1335	Nicotinamide adenine dinucleotide phosphate	

Products

Table 1376: Properties of each product.

Id	Name	SBO
s_1407	p-Cresol	
s_0333	5'-Deoxyadenosine	
s_0738	dehydroglycine	
s_1141	L-Methionine	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{343} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1552} \cdot \left(\frac{[\text{s_1552}]}{\text{ic1552}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep1189} \cdot \left(\frac{[\text{s_1189}]}{\text{ic1189}} \right) + \text{ep1407} \cdot \left(\frac{[\text{s_1407}]}{\text{ic1407}} \right) + \text{ep0333} \cdot \left(\frac{[\text{s_0333}]}{\text{ic0333}} \right) + \text{ep0738} \cdot \left(\frac{[\text{s_0738}]}{\text{ic0738}} \right) + \text{ep1141} \cdot \left(\frac{[\text{s_1141}]}{\text{ic1141}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) \right) \quad (687)$$

Table 1377: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1552			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1189			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1407			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0333			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep0738			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1141			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>

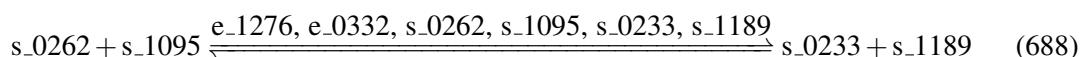
7.344 Reaction r_1376

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name tyrosine transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1378: Properties of each reactant.

Id	Name	SBO
s_0262	3-(4-Hydroxyphenyl)pyruvate	
s_1095	L-Glutamate	

Modifiers

Table 1379: Properties of each modifier.

Id	Name	SBO
e_1276	tyrB	0000460
e_0332	aspC	0000460
s_0262	3-(4-Hydroxyphenyl)pyruvate	
s_1095	L-Glutamate	
s_0233	2-Oxoglutarate	
s_1189	L-Tyrosine	

Products

Table 1380: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1189	L-Tyrosine	

Kinetic Law

Derived unit contains undeclared units

$$v_{344} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0262} \cdot \left(\frac{[\text{s_0262}]}{\text{ic0262}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s_0233}]}{\text{ic0233}} \right) + \text{ep1189} \cdot \left(\frac{[\text{s_1189}]}{\text{ic1189}} \right) \right) \quad (689)$$

Table 1381: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.019	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.019	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0262			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1189			-1.000	dimensionless	<input checked="" type="checkbox"/>

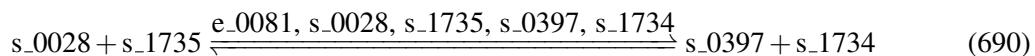
7.345 Reaction r_1378

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name UDP-3-O-(3-hydroxymyristoyl)glucosamine acyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1382: Properties of each reactant.

Id	Name	SBO
s_0028	(R)-3-Hydroxytetradecanoyl-[acyl-carrier protein]	
s_1735	UDP-3-O-(3-hydroxytetradecanoyl)-D-glucosamine	

Modifiers

Table 1383: Properties of each modifier.

Id	Name	SBO
e_0081	lpxD	0000460
s_0028	(R)-3-Hydroxytetradecanoyl-[acyl-carrier protein]	
s_1735	UDP-3-O-(3-hydroxytetradecanoyl)-D-glucosamine	
s_0397	acyl carrier protein	
s_1734	UDP-2,3-bis(3-hydroxytetradecanoyl)glucosamine	

Products

Table 1384: Properties of each product.

Id	Name	SBO
s_0397	acyl carrier protein	
s_1734	UDP-2,3-bis(3-hydroxytetradecanoyl)glucosamine	

Kinetic Law

Derived unit contains undeclared units

$$v_{345} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0028 \cdot \left(\frac{[\text{s}_0028]}{\text{ic}0028} \right) + \text{ep}1735 \cdot \left(\frac{[\text{s}_1735]}{\text{ic}1735} \right) + \text{ep}0397 \cdot \left(\frac{[\text{s}_0397]}{\text{ic}0397} \right) + \text{ep}1734 \cdot \left(\frac{[\text{s}_1734]}{\text{ic}1734} \right) \right) \quad (691)$$

Table 1385: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0028			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1735			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1734			-1.000	dimensionless	<input checked="" type="checkbox"/>

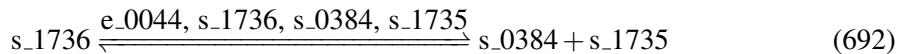
7.346 Reaction r_1379

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name UDP-3-O-acetylglucosamine deacetylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1386: Properties of each reactant.

Id	Name	SBO
s_1736	UDP-3-O-(3-hydroxytetradecanoyl)-N-acetylglucosamine	

Modifiers

Table 1387: Properties of each modifier.

Id	Name	SBO
e_0044	lpxC	0000460
s_1736	UDP-3-O-(3-hydroxytetradecanoyl)-N-acetylglucosamine	
s_0384	Acetate	
s_1735	UDP-3-O-(3-hydroxytetradecanoyl)-D-glucosamine	

Products

Table 1388: Properties of each product.

Id	Name	SBO
s_0384	Acetate	
s_1735	UDP-3-O-(3-hydroxytetradecanoyl)-D-glucosamine	

Kinetic Law

Derived unit contains undeclared units

$$v_{346} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1736} \cdot \left(\frac{[s_{1736}]}{\text{ic1736}} \right) + \text{ep0384} \cdot \left(\frac{[s_{0384}]}{\text{ic0384}} \right) + \text{ep1735} \cdot \left(\frac{[s_{1735}]}{\text{ic1735}} \right) \right) \quad (693)$$

Table 1389: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1736			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0384			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1735			-1.000	dimensionless	<input checked="" type="checkbox"/>

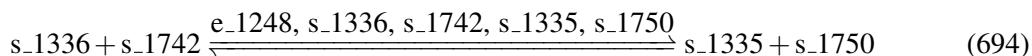
7.347 Reaction r_1388

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name UDP-N-acetylenolpyruvoylglucosamine reductase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1390: Properties of each reactant.

Id	Name	SBO
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1742	UDP-N-acetyl-3-O-(1-carboxyvinyl)-D-glucosamine	

Modifiers

Table 1391: Properties of each modifier.

Id	Name	SBO
e_1248	murB	0000460
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	
s_1742	UDP-N-acetyl-3-O-(1-carboxyvinyl)-D-glucosamine	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1750	UDP-N-acetylmuramate	

Products

Table 1392: Properties of each product.

Id	Name	SBO
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1750	UDP-N-acetylmuramate	

Kinetic Law

Derived unit contains undeclared units

$$v_{347} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) + \text{ep1742} \cdot \left(\frac{[\text{s_1742}]}{\text{ic1742}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) + \text{ep1750} \cdot \left(\frac{[\text{s_1750}]}{\text{ic1750}} \right) \right) \quad (695)$$

Table 1393: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1336			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1742			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1750			-1.000	dimensionless	<input checked="" type="checkbox"/>

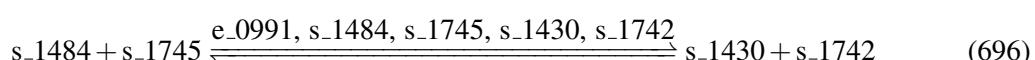
7.348 Reaction r_1389

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name UDP-N-acetylglucosamine 1-carboxyvinyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1394: Properties of each reactant.

Id	Name	SBO
s_1484	Phosphoenolpyruvate	
s_1745	UDP-N-acetyl-D-glucosamine	

Modifiers

Table 1395: Properties of each modifier.

Id	Name	SBO
e_0991	murA	0000460
s_1484	Phosphoenolpyruvate	
s_1745	UDP-N-acetyl-D-glucosamine	
s_1430	Phosphate	
s_1742	UDP-N-acetyl-3-O-(1-carboxyvinyl)-D-glucosamine	

Products

Table 1396: Properties of each product.

Id	Name	SBO
s_1430	Phosphate	
s_1742	UDP-N-acetyl-3-O-(1-carboxyvinyl)-D-glucosamine	

Kinetic Law

Derived unit contains undeclared units

$$v_{348} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1484} \cdot \left(\frac{[\text{s}_1484]}{\text{ic1484}} \right) + \text{ep1745} \cdot \left(\frac{[\text{s}_1745]}{\text{ic1745}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) + \text{ep1742} \cdot \left(\frac{[\text{s}_1742]}{\text{ic1742}} \right) \right) \quad (697)$$

Table 1397: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1484			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1745			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1742			-1.000	dimensionless	<input checked="" type="checkbox"/>

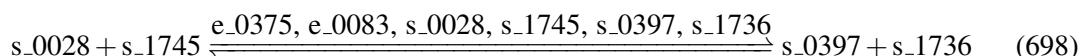
7.349 Reaction r_1391

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name UDP-N-acetylglucosamine acyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1398: Properties of each reactant.

Id	Name	SBO
s_{_0028}	(R)-3-Hydroxytetradecanoyl-[acyl-carrier protein]	
s_{_1745}	UDP-N-acetyl-D-glucosamine	

Modifiers

Table 1399: Properties of each modifier.

Id	Name	SBO
e_{_0375}	acpP	0000460
e_{_0083}	lpxA	0000460
s_{_0028}	(R)-3-Hydroxytetradecanoyl-[acyl-carrier protein]	
s_{_1745}	UDP-N-acetyl-D-glucosamine	
s_{_0397}	acyl carrier protein	
s_{_1736}	UDP-3-O-(3-hydroxytetradecanoyl)-N-acetylglucosamine	

Products

Table 1400: Properties of each product.

Id	Name	SBO
s_0397	acyl carrier protein	
s_1736	UDP-3-O-(3-hydroxytetradecanoyl)-N-acetylglucosamine	

Kinetic Law

Derived unit contains undeclared units

$$v_{349} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0028 \cdot \left(\frac{[\text{s_0028}]}{\text{ic}0028} \right) + \text{ep}1745 \cdot \left(\frac{[\text{s_1745}]}{\text{ic}1745} \right) + \text{ep}0397 \cdot \left(\frac{[\text{s_0397}]}{\text{ic}0397} \right) + \text{ep}1736 \cdot \left(\frac{[\text{s_1736}]}{\text{ic}1736} \right) \right) \quad (699)$$

Table 1401: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.005	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0028			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1745			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0397			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1736			-1.000	dimensionless	<input checked="" type="checkbox"/>

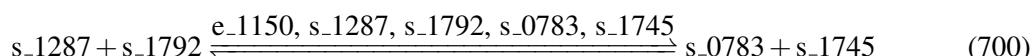
7.350 Reaction r_1392

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name UDP-N-acetylglucosamine diphosphorylase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1402: Properties of each reactant.

Id	Name	SBO
s_1287	N-Acetyl-D-glucosamine 1-phosphate	
s_1792	UTP	

Modifiers

Table 1403: Properties of each modifier.

Id	Name	SBO
e_1150	glmU	0000460
s_1287	N-Acetyl-D-glucosamine 1-phosphate	
s_1792	UTP	
s_0783	Diphosphate	
s_1745	UDP-N-acetyl-D-glucosamine	

Products

Table 1404: Properties of each product.

Id	Name	SBO
s_0783	Diphosphate	
s_1745	UDP-N-acetyl-D-glucosamine	

Kinetic Law

Derived unit contains undeclared units

$$v_{350} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1287} \cdot \left(\frac{[\text{s}_1287]}{\text{ic1287}} \right) + \text{ep1792} \cdot \left(\frac{[\text{s}_1792]}{\text{ic1792}} \right) + \text{ep0783} \cdot \left(\frac{[\text{s}_0783]}{\text{ic0783}} \right) + \text{ep1745} \cdot \left(\frac{[\text{s}_1745]}{\text{ic1745}} \right) \right) \quad (701)$$

Table 1405: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.013	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1287			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1792			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1745			-1.000	dimensionless	<input checked="" type="checkbox"/>

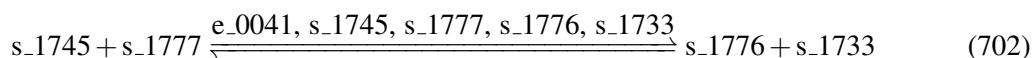
7.351 Reaction r_1393

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name UDP-N-acetylglucosamine-N-acetylmuramyl-(pentapeptide)pyrophosphoryl-undecaprenol N-acetylglucosamine transferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1406: Properties of each reactant.

Id	Name
s_1745	UDP-N-acetyl-D-glucosamine
s_1777	Undecaprenyl-diphospho-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-

Modifiers

Table 1407: Properties of each modifier.

Id	Name
e_0041	murG
s_1745	UDP-N-acetyl-D-glucosamine
s_1777	Undecaprenyl-diphospho-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-
s_1776	Undecaprenyl-diphospho-N-acetylmuramoyl-(N-acetylglucosamine)-L-ala-D-glu-meso-2,6-diaminopimeloyl-D-alanyl-
s_1733	UDP

Products

Table 1408: Properties of each product.

Id	Name
s_1776	Undecaprenyl-diphospho-N-acetylmuramoyl-(N-acetylglucosamine)-L-ala-D-glu-meso-2,6-diaminopimelic acid
s_1733	UDP

Kinetic Law

Derived unit contains undeclared units

$$v_{351} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1745} \cdot \left(\frac{[\text{s}_1745]}{\text{ic1745}} \right) + \text{ep1777} \cdot \left(\frac{[\text{s}_1777]}{\text{ic1777}} \right) + \text{ep1776} \cdot \left(\frac{[\text{s}_1776]}{\text{ic1776}} \right) + \text{ep1733} \cdot \left(\frac{[\text{s}_1733]}{\text{ic1733}} \right) \right) \quad (703)$$

Table 1409: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1745			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1777			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1776			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1733			-1.000	dimensionless	<input checked="" type="checkbox"/>

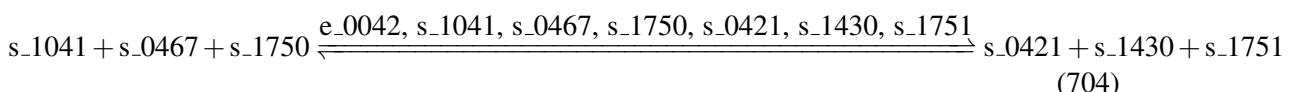
7.352 Reaction r_1397

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name UDP-N-acetylmuramoyl-L-alanine synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1410: Properties of each reactant.

Id	Name	SBO
s_1041	L-Alanine	
s_0467	ATP	
s_1750	UDP-N-acetylmuramate	

Modifiers

Table 1411: Properties of each modifier.

Id	Name	SBO
e_0042	murC	0000460
s_1041	L-Alanine	
s_0467	ATP	
s_1750	UDP-N-acetylmuramate	
s_0421	ADP	
s_1430	Phosphate	
s_1751	UDP-N-acetylmuramoyl-L-alanine	

Products

Table 1412: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1430	Phosphate	
s_1751	UDP-N-acetylmuramoyl-L-alanine	

Kinetic Law

Derived unit contains undeclared units

$$v_{352} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}1041 \cdot \left(\frac{[\text{s}_1041]}{\text{ic}1041} \right) + \text{ep}0467 \cdot \left(\frac{[\text{s}_0467]}{\text{ic}0467} \right) + \text{ep}1750 \cdot \left(\frac{[\text{s}_1750]}{\text{ic}1750} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s}_0421]}{\text{ic}0421} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s}_1430]}{\text{ic}1430} \right) + \text{ep}1751 \cdot \left(\frac{[\text{s}_1751]}{\text{ic}1751} \right) \right) \quad (705)$$

Table 1413: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1041			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1750			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1751			-1.000	dimensionless	<input checked="" type="checkbox"/>

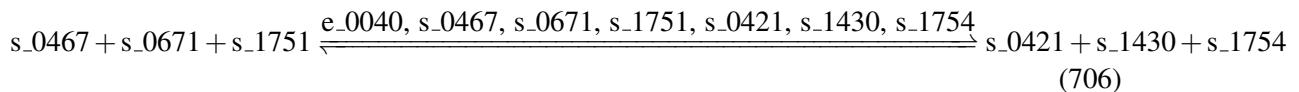
7.353 Reaction r_1399

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name UDP-N-acetylmuramoyl-L-alanyl-D-glutamate synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1414: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_0671	D-Glutamate	
s_1751	UDP-N-acetylmuramoyl-L-alanine	

Modifiers

Table 1415: Properties of each modifier.

Id	Name	SBO
e_0040	murD	0000460
s_0467	ATP	

Id	Name	SBO
s_0671	D-Glutamate	
s_1751	UDP-N-acetylmuramoyl-L-alanine	
s_0421	ADP	
s_1430	Phosphate	
s_1754	UDP-N-acetylmuramoyl-L-alanyl-D-glutamate	

Products

Table 1416: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1430	Phosphate	
s_1754	UDP-N-acetylmuramoyl-L-alanyl-D-glutamate	

Kinetic Law

Derived unit contains undeclared units

$$v_{353} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep0671} \cdot \left(\frac{[\text{s_0671}]}{\text{ic0671}} \right) + \text{ep1751} \cdot \left(\frac{[\text{s_1751}]}{\text{ic1751}} \right) \right. \\ \left. + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) + \text{ep1754} \cdot \left(\frac{[\text{s_1754}]}{\text{ic1754}} \right) \right) \quad (707)$$

Table 1417: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0671			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1751			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			−1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			−1.000	dimensionless	<input checked="" type="checkbox"/>
ep1754			−1.000	dimensionless	<input checked="" type="checkbox"/>

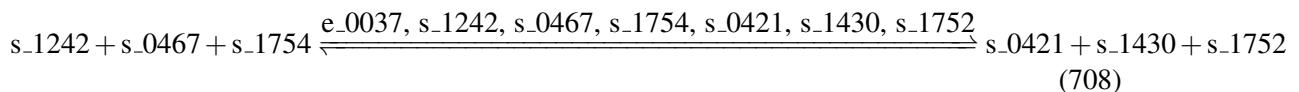
7.354 Reaction r_1400

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimelate synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1418: Properties of each reactant.

Id	Name	SBO
s_1242	meso-2,6-Diaminoheptanedioate	
s_0467	ATP	
s_1754	UDP-N-acetylmuramoyl-L-alanyl-D-glutamate	

Modifiers

Table 1419: Properties of each modifier.

Id	Name	SBO
e_0037	murE	0000460
s_1242	meso-2,6-Diaminoheptanedioate	
s_0467	ATP	
s_1754	UDP-N-acetylmuramoyl-L-alanyl-D-glutamate	
s_0421	ADP	
s_1430	Phosphate	
s_1752	UDP-N-acetylmuramoyl-L-alanyl-D-gamma-glutamyl-meso-2,6-diaminopimelate	

Products

Table 1420: Properties of each product.

Id	Name	SBO
s_0421	ADP	

Id	Name	SBO
s_1430	Phosphate	
s_1752	UDP-N-acetylmuramoyl-L-alanyl-D-gamma-glutamyl-meso-2,6-diaminopimelate	

Kinetic Law

Derived unit contains undeclared units

$$v_{354} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1242} \cdot \left(\frac{[\text{s_1242}]}{\text{ic1242}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1754} \cdot \left(\frac{[\text{s_1754}]}{\text{ic1754}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) + \text{ep1752} \cdot \left(\frac{[\text{s_1752}]}{\text{ic1752}} \right) \right) \quad (709)$$

Table 1421: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1242			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1754			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1752			-1.000	dimensionless	<input checked="" type="checkbox"/>

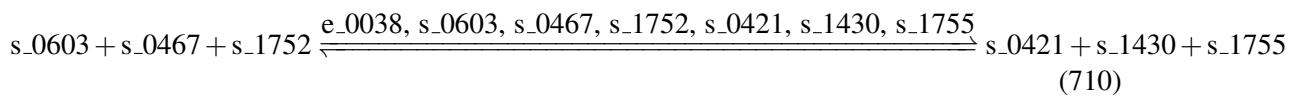
7.355 Reaction r_1401

This is a reversible reaction of three reactants forming three products influenced by seven modifiers.

Name UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine synthetase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1422: Properties of each reactant.

Id	Name	SBO
s_0603	D-Alanyl-D-alanine	
s_0467	ATP	
s_1752	UDP-N-acetylmuramoyl-L-alanyl-D-gamma-glutamyl-meso-2,6-diaminopimelate	

Modifiers

Table 1423: Properties of each modifier.

Id	Name	SBO
e_0038	murF	000046
s_0603	D-Alanyl-D-alanine	
s_0467	ATP	
s_1752	UDP-N-acetylmuramoyl-L-alanyl-D-gamma-glutamyl-meso-2,6-diaminopimelate	
s_0421	ADP	
s_1430	Phosphate	
s_1755	UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine	

Products

Table 1424: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1430	Phosphate	
s_1755	UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine	

Kinetic Law

Derived unit contains undeclared units

$$v_{355} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0603 \cdot \left(\frac{[\text{s}_0603]}{\text{ic}0603} \right) + \text{ep}0467 \cdot \left(\frac{[\text{s}_0467]}{\text{ic}0467} \right) + \text{ep}1752 \cdot \left(\frac{[\text{s}_1752]}{\text{ic}1752} \right) \right. \\ \left. + \text{ep}0421 \cdot \left(\frac{[\text{s}_0421]}{\text{ic}0421} \right) + \text{ep}1430 \cdot \left(\frac{[\text{s}_1430]}{\text{ic}1430} \right) + \text{ep}1755 \cdot \left(\frac{[\text{s}_1755]}{\text{ic}1755} \right) \right) \quad (711)$$

Table 1425: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0603			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1752			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1755			-1.000	dimensionless	<input checked="" type="checkbox"/>

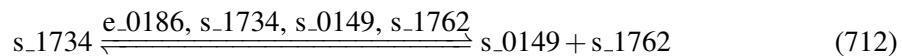
7.356 Reaction r_1402

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name UDP-sugar hydrolase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1426: Properties of each reactant.

Id	Name	SBO
s_{-1734}	UDP-2,3-bis(3-hydroxytetradecanoyl)glucosamine	

Modifiers

Table 1427: Properties of each modifier.

Id	Name	SBO
e_{-0186}	lpxH	0000460
s_{-1734}	UDP-2,3-bis(3-hydroxytetradecanoyl)glucosamine	
s_{-0149}	2,3-Bis(3-hydroxytetradecanoyl)-beta-D-glucosaminyl 1-phosphate	
s_{-1762}	UMP	

Products

Table 1428: Properties of each product.

Id	Name	SBO
s_0149	2,3-Bis(3-hydroxytetradecanoyl)-beta-D-glucosaminyl 1-phosphate	
s_1762	UMP	

Kinetic Law

Derived unit contains undeclared units

$$v_{356} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1734} \cdot \left(\frac{[\text{s_1734}]}{\text{ic1734}} \right) + \text{ep0149} \cdot \left(\frac{[\text{s_0149}]}{\text{ic0149}} \right) + \text{ep1762} \cdot \left(\frac{[\text{s_1762}]}{\text{ic1762}} \right) \right) \quad (713)$$

Table 1429: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.003	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1734			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0149			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1762			-1.000	dimensionless	<input checked="" type="checkbox"/>

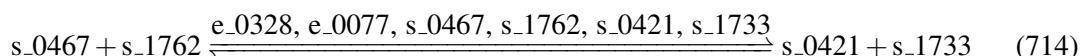
7.357 Reaction r_1409

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name UMP kinase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1430: Properties of each reactant.

Id	Name	SBO
s_0467	ATP	
s_1762	UMP	

Modifiers

Table 1431: Properties of each modifier.

Id	Name	SBO
e_0328	cmk	0000460
e_0077	pyrH	0000460
s_0467	ATP	
s_1762	UMP	
s_0421	ADP	
s_1733	UDP	

Products

Table 1432: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1733	UDP	

Kinetic Law

Derived unit contains undeclared units

$$v_{357} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep}0467 \cdot \left(\frac{[\text{s}_0467]}{\text{ic}0467} \right) + \text{ep}1762 \cdot \left(\frac{[\text{s}_1762]}{\text{ic}1762} \right) + \text{ep}0421 \cdot \left(\frac{[\text{s}_0421]}{\text{ic}0421} \right) + \text{ep}1733 \cdot \left(\frac{[\text{s}_1733]}{\text{ic}1733} \right) \right) \quad (715)$$

Table 1433: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.052	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.052	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0467			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1762			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0421			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1733			-1.000	dimensionless	<input checked="" type="checkbox"/>

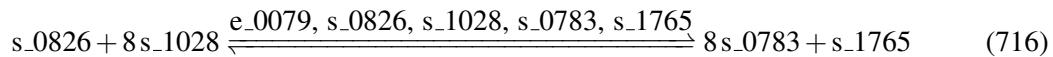
7.358 Reaction r_1410

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name Undecaprenyl diphosphate synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1434: Properties of each reactant.

Id	Name	SBO
s_0826	Farnesyl diphosphate	
s_1028	Isopentenyl diphosphate	

Modifiers

Table 1435: Properties of each modifier.

Id	Name	SBO
e_0079	uppS	0000460
s_0826	Farnesyl diphosphate	
s_1028	Isopentenyl diphosphate	
s_0783	Diphosphate	
s_1765	Undecaprenyl diphosphate	

Products

Table 1436: Properties of each product.

Id	Name	SBO
s_0783	Diphosphate	
s_1765	Undecaprenyl diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{358} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0826 \cdot \left(\frac{[\text{s_0826}]}{\text{ic0826}} \right) + \text{ep}1028 \cdot \left(\frac{[\text{s_1028}]}{\text{ic1028}} \right) + \text{ep}0783 \cdot \left(\frac{[\text{s_0783}]}{\text{ic0783}} \right) + \text{ep}1765 \cdot \left(\frac{[\text{s_1765}]}{\text{ic1765}} \right) \right) \quad (717)$$

Table 1437: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.61842038009631 \cdot 10^{-6}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.61842038009631 \cdot 10^{-6}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0826			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1028			8.000	dimensionless	<input checked="" type="checkbox"/>
ep0783			-8.000	dimensionless	<input checked="" type="checkbox"/>
ep1765			-1.000	dimensionless	<input checked="" type="checkbox"/>

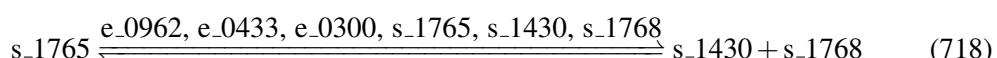
7.359 Reaction r_1413

This is a reversible reaction of one reactant forming two products influenced by six modifiers.

Name undecaprenyl-diphosphatase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1438: Properties of each reactant.

Id	Name	SBO
s_1765	Undecaprenyl diphosphate	

Modifiers

Table 1439: Properties of each modifier.

Id	Name	SBO
e_0962	uppP	0000460
e_0433	pgpB	0000460
e_0300	ybjG	0000460
s_1765	Undecaprenyl diphosphate	
s_1430	Phosphate	
s_1768	Undecaprenyl phosphate	

Products

Table 1440: Properties of each product.

Id	Name	SBO
s_1430	Phosphate	
s_1768	Undecaprenyl phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{359} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1765} \cdot \left(\frac{[\text{s}_1765]}{\text{ic1765}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) + \text{ep1768} \cdot \left(\frac{[\text{s}_1768]}{\text{ic1768}} \right) \right) \quad (719)$$

Table 1441: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.004	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1765			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1768			-1.000	dimensionless	<input checked="" type="checkbox"/>

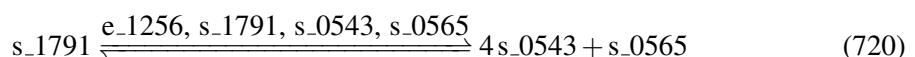
7.360 Reaction r_1421

This is a reversible reaction of one reactant forming two products influenced by four modifiers.

Name uroporphyrinogen decarboxylase (uroporphyrinogen III)

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1442: Properties of each reactant.

Id	Name	SBO
s_1791	Uroporphyrinogen III	

Modifiers

Table 1443: Properties of each modifier.

Id	Name	SBO
e_1256	hemE	0000460
s_1791	Uroporphyrinogen III	
s_0543	CO2	
s_0565	Coproporphyrinogen III	

Products

Table 1444: Properties of each product.

Id	Name	SBO
s_0543	CO2	
s_0565	Coproporphyrinogen III	

Kinetic Law

Derived unit contains undeclared units

$$v_{360} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep1791} \cdot \left(\frac{[\text{s_1791}]}{\text{ic1791}} \right) + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) + \text{ep0565} \cdot \left(\frac{[\text{s_0565}]}{\text{ic0565}} \right) \right) \quad (721)$$

Table 1445: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317225085 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317225085 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1791			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0543			-4.000	dimensionless	<input checked="" type="checkbox"/>
ep0565			-1.000	dimensionless	<input checked="" type="checkbox"/>

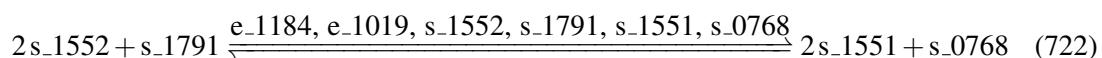
7.361 Reaction r_1422

This is a reversible reaction of two reactants forming two products influenced by six modifiers.

Name uroporphyrinogen methyltransferase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1446: Properties of each reactant.

Id	Name	SBO
s_1552	S-Adenosyl-L-methionine	
s_1791	Uroporphyrinogen III	

Modifiers

Table 1447: Properties of each modifier.

Id	Name	SBO
e_1184	hemX	0000460
e_1019	cysG	0000460

Id	Name	SBO
s_1552	S-Adenosyl-L-methionine	
s_1791	Uroporphyrinogen III	
s_1551	S-Adenosyl-L-homocysteine	
s_0768	dihydrosirohydrochlorin	

Products

Table 1448: Properties of each product.

Id	Name	SBO
s_1551	S-Adenosyl-L-homocysteine	
s_0768	dihydrosirohydrochlorin	

Kinetic Law

Derived unit contains undeclared units

$$v_{361} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1552} \cdot \left(\frac{[\text{s_1552}]}{\text{ic1552}} \right) + \text{ep1791} \cdot \left(\frac{[\text{s_1791}]}{\text{ic1791}} \right) + \text{ep1551} \cdot \left(\frac{[\text{s_1551}]}{\text{ic1551}} \right) + \text{ep0768} \cdot \left(\frac{[\text{s_0768}]}{\text{ic0768}} \right) \right) \quad (723)$$

Table 1449: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1552			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1791			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1551			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep0768			-1.000	dimensionless	<input checked="" type="checkbox"/>

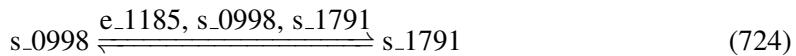
7.362 Reaction r_1423

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name uroporphyrinogen-III synthase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1450: Properties of each reactant.

Id	Name	SBO
s_0998	Hydroxymethylbilane	

Modifiers

Table 1451: Properties of each modifier.

Id	Name	SBO
e_1185	hemD	0000460
s_0998	Hydroxymethylbilane	
s_1791	Uroporphyrinogen III	

Product

Table 1452: Properties of each product.

Id	Name	SBO
s_1791	Uroporphyrinogen III	

Kinetic Law

Derived unit contains undeclared units

$$v_{362} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep}0998 \cdot \left(\frac{[s_{_0998}]}{\text{ic}0998} \right) + \text{ep}1791 \cdot \left(\frac{[s_{_1791}]}{\text{ic}1791} \right) \right) \quad (725)$$

Table 1453: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			6.1778463445417 · 10 ⁻⁵	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>
v0			6.1778463445417 · 10 ⁻⁵	mmol · l ⁻¹ · s ⁻¹	<input checked="" type="checkbox"/>
ep0998			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1791			-1.000	dimensionless	<input checked="" type="checkbox"/>

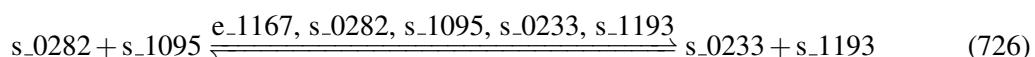
7.363 Reaction r_1425

This is a reversible reaction of two reactants forming two products influenced by five modifiers.

Name valine transaminase

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1454: Properties of each reactant.

Id	Name	SBO
s_0282	3-Methyl-2-oxobutanoate	
s_1095	L-Glutamate	

Modifiers

Table 1455: Properties of each modifier.

Id	Name	SBO
e_1167	ilvE	0000460
s_0282	3-Methyl-2-oxobutanoate	
s_1095	L-Glutamate	
s_0233	2-Oxoglutarate	
s_1193	L-Valine	

Products

Table 1456: Properties of each product.

Id	Name	SBO
s_0233	2-Oxoglutarate	
s_1193	L-Valine	

Kinetic Law

Derived unit contains undeclared units

$$v_{363} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0282} \cdot \left(\frac{[\text{s_0282}]}{\text{ic0282}} \right) + \text{ep1095} \cdot \left(\frac{[\text{s_1095}]}{\text{ic1095}} \right) + \text{ep0233} \cdot \left(\frac{[\text{s_0233}]}{\text{ic0233}} \right) + \text{ep1193} \cdot \left(\frac{[\text{s_1193}]}{\text{ic1193}} \right) \right) \quad (727)$$

Table 1457: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.059	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.059	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0282			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1095			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0233			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1193			-1.000	dimensionless	<input checked="" type="checkbox"/>

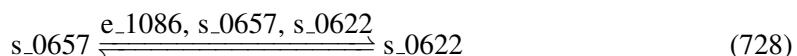
7.364 Reaction r_1432

This is a reversible reaction of one reactant forming one product influenced by three modifiers.

Name xylose isomerase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1458: Properties of each reactant.

Id	Name	SBO
s_0657	D-Glucose	

Modifiers

Table 1459: Properties of each modifier.

Id	Name	SBO
e_1086	xylA	0000460

Id	Name	SBO
s_0657	D-Glucose	
s_0622	D-Fructose	

Product

Table 1460: Properties of each product.

Id	Name	SBO
s_0622	D-Fructose	

Kinetic Law

Derived unit contains undeclared units

$$v_{364} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0657} \cdot \left(\frac{[\text{s_0657}]}{\text{ic0657}} \right) + \text{ep0622} \cdot \left(\frac{[\text{s_0622}]}{\text{ic0622}} \right) \right) \quad (729)$$

Table 1461: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.066	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.066	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0657			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0622			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.365 Reaction r_1511

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name ammonia transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1462: Properties of each reactant.

Id	Name	SBO
s_0453	Ammonium	

Modifiers

Table 1463: Properties of each modifier.

Id	Name	SBO
s_0453	Ammonium	
s_0451	Ammonium	

Product

Table 1464: Properties of each product.

Id	Name	SBO
s_0451	Ammonium	

Kinetic Law

Derived unit contains undeclared units

$$v_{365} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep0453} \cdot \left(\frac{[\text{s}_0453]}{\text{ic0453}} \right) + \text{ep0451} \cdot \left(\frac{[\text{s}_0451]}{\text{ic0451}} \right) \right) \quad (731)$$

Table 1465: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			1.493	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			1.493	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0453			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0451			-1.000	dimensionless	<input checked="" type="checkbox"/>

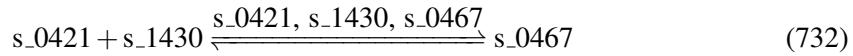
7.366 Reaction r_1521

This is a reversible reaction of two reactants forming one product influenced by three modifiers.

Name ATP synthase (four protons for one ATP) (periplasm)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1466: Properties of each reactant.

Id	Name	SBO
s_0421	ADP	
s_1430	Phosphate	

Modifiers

Table 1467: Properties of each modifier.

Id	Name	SBO
s_0421	ADP	
s_1430	Phosphate	
s_0467	ATP	

Product

Table 1468: Properties of each product.

Id	Name	SBO
s_0467	ATP	

Kinetic Law

Derived unit contains undeclared units

$$v_{366} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0421} \cdot \left(\frac{[s_0421]}{\text{ic0421}} \right) + \text{ep1430} \cdot \left(\frac{[s_1430]}{\text{ic1430}} \right) + \text{ep0467} \cdot \left(\frac{[s_0467]}{\text{ic0467}} \right) \right) \quad (733)$$

Table 1469: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			12.851	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			12.851	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0421			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.367 Reaction r_1536

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name calcium (Ca+2) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1470: Properties of each reactant.

Id	Name	SBO
s_0499	Calcium	

Modifiers

Table 1471: Properties of each modifier.

Id	Name	SBO
s_0499	Calcium	
s_0497	Calcium	

Product

Table 1472: Properties of each product.

Id	Name	SBO
s_0497	Calcium	

Kinetic Law

Derived unit contains undeclared units

$$v_{367} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0499} \cdot \left(\frac{[\text{s_0499}]}{\text{ic0499}} \right) + \text{ep0497} \cdot \left(\frac{[\text{s_0497}]}{\text{ic0497}} \right) \right) \quad (735)$$

Table 1473: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.20979601425486 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.20979601425486 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0499			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0497			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.368 Reaction r_1543

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name chloride (Cl-1) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1474: Properties of each reactant.

Id	Name	SBO
s_0522	Chloride	

Modifiers

Table 1475: Properties of each modifier.

Id	Name	SBO
s_0522	Chloride	
s_0520	Chloride	

Product

Table 1476: Properties of each product.

Id	Name	SBO
s_0520	Chloride	

Kinetic Law

Derived unit contains undeclared units

$$v_{368} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0522} \cdot \left(\frac{[\text{s_0522}]}{\text{ic0522}} \right) + \text{ep0520} \cdot \left(\frac{[\text{s_0520}]}{\text{ic0520}} \right) \right) \quad (737)$$

Table 1477: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$7.20979601425486 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$7.20979601425486 \cdot 10^{-4}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0522			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0520			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.369 Reaction r_1551

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Name CO2 transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1478: Properties of each reactant.

Id	Name	SBO
s_0543	CO2	

Modifier

Table 1479: Properties of each modifier.

Id	Name	SBO
s_0543	CO2	

Product

Table 1480: Properties of each product.

Id	Name	SBO
s_0545	CO2	

Kinetic Law**Derived unit** contains undeclared units

$$v_{369} = \text{vol}(\text{cell}) \cdot \max \left(v0 \cdot \left(1 + \text{ep0543} \cdot \left(\frac{[\text{s_0543}]}{\text{ic0543}} \right) \right), \text{zero_flux} \right) \quad (739)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (740)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (741)$$

Table 1481: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.321	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.321	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0543			1.000	dimensionless	<input checked="" type="checkbox"/>

7.370 Reaction r_1557

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name cobalt (Co+2) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1482: Properties of each reactant.

Id	Name	SBO
s_{-0548}	Co2+	

Modifiers

Table 1483: Properties of each modifier.

Id	Name	SBO
s_{-0548}	Co2+	
s_{-0546}	Co2+	

Product

Table 1484: Properties of each product.

Id	Name	SBO
s_{-0546}	Co2+	

Kinetic Law

Derived unit contains undeclared units

$$v_{370} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0548} \cdot \left(\frac{[\text{s}_{-0548}]}{\text{ic0548}} \right) + \text{ep0546} \cdot \left(\frac{[\text{s}_{-0546}]}{\text{ic0546}} \right) \right) \quad (743)$$

Table 1485: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.46291835458927 \cdot 10^{-6}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.46291835458927 \cdot 10^{-6}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0548			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0546			-1.000	dimensionless	<input checked="" type="checkbox"/>

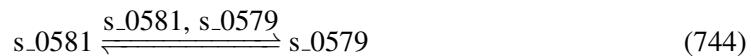
7.371 Reaction r_1565

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name copper (Cu²⁺) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1486: Properties of each reactant.

Id	Name	SBO
s_0581	Cu ²⁺	

Modifiers

Table 1487: Properties of each modifier.

Id	Name	SBO
s_0581	Cu ²⁺	
s_0579	Cu ²⁺	

Product

Table 1488: Properties of each product.

Id	Name	SBO
s_0579	Cu ²⁺	

Kinetic Law

Derived unit contains undeclared units

$$v_{371} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0581} \cdot \left(\frac{[\text{s_0581}]}{\text{ic0581}} \right) + \text{ep0579} \cdot \left(\frac{[\text{s_0579}]}{\text{ic0579}} \right) \right) \quad (745)$$

Table 1489: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.82083645361517 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.82083645361517 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0581			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0579			-1.000	dimensionless	<input checked="" type="checkbox"/>

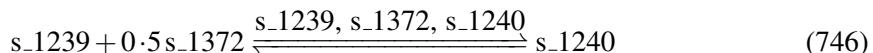
7.372 Reaction r_1581

This is a reversible reaction of two reactants forming one product influenced by three modifiers.

Name cytochrome oxidase bd (menaquinol-8: 2 protons) (periplasm)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1490: Properties of each reactant.

Id	Name	SBO
s_1239	Menaquinol 8	
s_1372	O2	

Modifiers

Table 1491: Properties of each modifier.

Id	Name	SBO
s_1239	Menaquinol 8	

Id	Name	SBO
s_1372	O2	
s_1240	Menaquinone 8	

Product

Table 1492: Properties of each product.

Id	Name	SBO
s_1240	Menaquinone 8	

Kinetic Law

Derived unit contains undeclared units

$$v_{372} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1239} \cdot \left(\frac{[\text{s_1239}]}{\text{ic1239}} \right) + \text{ep1372} \cdot \left(\frac{[\text{s_1372}]}{\text{ic1372}} \right) + \text{ep1240} \cdot \left(\frac{[\text{s_1240}]}{\text{ic1240}} \right) \right) \quad (747)$$

Table 1493: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1239			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1372			0.500	dimensionless	<input checked="" type="checkbox"/>
ep1240			-1.000	dimensionless	<input checked="" type="checkbox"/>

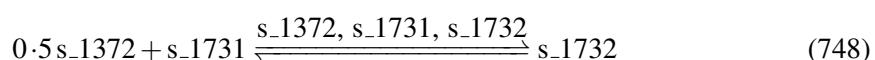
7.373 Reaction r_1582

This is a reversible reaction of two reactants forming one product influenced by three modifiers.

Name cytochrome oxidase bd (ubiquinol-8: 2 protons) (periplasm)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1494: Properties of each reactant.

Id	Name	SBO
s_1372	O2	
s_1731	Ubiquinol-8	

Modifiers

Table 1495: Properties of each modifier.

Id	Name	SBO
s_1372	O2	
s_1731	Ubiquinol-8	
s_1732	Ubiquinone-8	

Product

Table 1496: Properties of each product.

Id	Name	SBO
s_1732	Ubiquinone-8	

Kinetic Law

Derived unit contains undeclared units

$$v_{373} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1372} \cdot \left(\frac{[\text{s}_1372]}{\text{ic1372}} \right) + \text{ep1731} \cdot \left(\frac{[\text{s}_1731]}{\text{ic1731}} \right) + \text{ep1732} \cdot \left(\frac{[\text{s}_1732]}{\text{ic1732}} \right) \right) \quad (749)$$

Table 1497: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1372			0.500	dimensionless	<input checked="" type="checkbox"/>
ep1731			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1732			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.374 Reaction r_1621

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name D-glucose transport via diffusion (extracellular to periplasm) irreversible

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1498: Properties of each reactant.

Id	Name	SBO
s_0659	D-Glucose	

Modifiers

Table 1499: Properties of each modifier.

Id	Name	SBO
s_0659	D-Glucose	
s_0657	D-Glucose	

Product

Table 1500: Properties of each product.

Id	Name	SBO
s_0657	D-Glucose	

Kinetic Law

Derived unit contains undeclared units

$$v_{374} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0659} \cdot \left(\frac{[s_{0659}]}{\text{ic0659}} \right) + \text{ep0657} \cdot \left(\frac{[s_{0657}]}{\text{ic0657}} \right) \right) \quad (751)$$

Table 1501: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			1.0	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			1.0	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0659			1.0	dimensionless	<input checked="" type="checkbox"/>
ep0657			-1.0	dimensionless	<input checked="" type="checkbox"/>

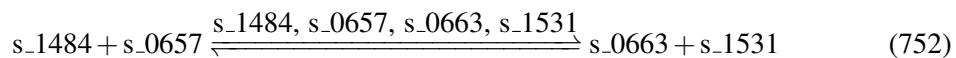
7.375 Reaction r_1622

This is a reversible reaction of two reactants forming two products influenced by four modifiers.

Name D-glucose transport via PEP:Pyr PTS (periplasm)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1502: Properties of each reactant.

Id	Name	SBO
s_1484	Phosphoenolpyruvate	
s_0657	D-Glucose	

Modifiers

Table 1503: Properties of each modifier.

Id	Name	SBO
s_1484	Phosphoenolpyruvate	
s_0657	D-Glucose	
s_0663	D-Glucose 6-phosphate	
s_1531	Pyruvate	

Products

Table 1504: Properties of each product.

Id	Name	SBO
s_0663	D-Glucose 6-phosphate	
s_1531	Pyruvate	

Kinetic Law

Derived unit contains undeclared units

$$v_{375} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1484} \cdot \left(\frac{[\text{s_1484}]}{\text{ic1484}} \right) + \text{ep0657} \cdot \left(\frac{[\text{s_0657}]}{\text{ic0657}} \right) + \text{ep0663} \cdot \left(\frac{[\text{s_0663}]}{\text{ic0663}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s_1531}]}{\text{ic1531}} \right) \right) \quad (753)$$

Table 1505: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.022	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.022	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1484			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0657			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0663			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			-1.000	dimensionless	<input checked="" type="checkbox"/>

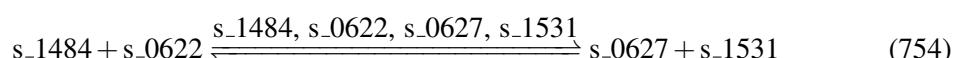
7.376 Reaction r_1714

This is a reversible reaction of two reactants forming two products influenced by four modifiers.

Name Fructose transport via PEP:Pyr PTS (f6p generating) (periplasm)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1506: Properties of each reactant.

Id	Name	SBO
s_1484	Phosphoenolpyruvate	
s_0622	D-Fructose	

Modifiers

Table 1507: Properties of each modifier.

Id	Name	SBO
s_1484	Phosphoenolpyruvate	
s_0622	D-Fructose	
s_0627	D-Fructose 6-phosphate	
s_1531	Pyruvate	

Products

Table 1508: Properties of each product.

Id	Name	SBO
s_0627	D-Fructose 6-phosphate	
s_1531	Pyruvate	

Kinetic Law

Derived unit contains undeclared units

$$v_{376} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1484} \cdot \left(\frac{[\text{s}_1484]}{\text{ic1484}} \right) + \text{ep0622} \cdot \left(\frac{[\text{s}_0622]}{\text{ic0622}} \right) + \text{ep0627} \cdot \left(\frac{[\text{s}_0627]}{\text{ic0627}} \right) + \text{ep1531} \cdot \left(\frac{[\text{s}_1531]}{\text{ic1531}} \right) \right) \quad (755)$$

Table 1509: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.011	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1484			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0622			1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0627			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1531			-1.000	dimensionless	<input checked="" type="checkbox"/>

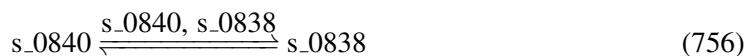
7.377 Reaction r_1792

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name iron (II) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1510: Properties of each reactant.

Id	Name	SBO
s_{-0840}	Fe2+	

Modifiers

Table 1511: Properties of each modifier.

Id	Name	SBO
s_{-0840}	Fe2+	
s_{-0838}	Fe2+	

Product

Table 1512: Properties of each product.

Id	Name	SBO
s_{-0838}	Fe2+	

Kinetic Law

Derived unit contains undeclared units

$$v_{377} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0840} \cdot \left(\frac{[\text{s_0840}]}{\text{ic0840}} \right) + \text{ep0838} \cdot \left(\frac{[\text{s_0838}]}{\text{ic0838}} \right) \right) \quad (757)$$

Table 1513: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.001	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.001	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0840			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0838			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.378 Reaction r_1793

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name iron (III) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1514: Properties of each reactant.

Id	Name	SBO
s_0843	Fe3+	

Modifiers

Table 1515: Properties of each modifier.

Id	Name	SBO
s_0843	Fe3+	
s_0841	Fe3+	

Product

Table 1516: Properties of each product.

Id	Name	SBO
s_0841	Fe3+	

Kinetic Law

Derived unit contains undeclared units

$$v_{378} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0843} \cdot \left(\frac{[\text{s_0843}]}{\text{ic0843}} \right) + \text{ep0841} \cdot \left(\frac{[\text{s_0841}]}{\text{ic0841}} \right) \right) \quad (759)$$

Table 1517: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.001	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.001	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0843			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0841			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.379 Reaction r_1906

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name magnesium (Mg+2) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1518: Properties of each reactant.

Id	Name	SBO
s_1214	magnesium	

Modifiers

Table 1519: Properties of each modifier.

Id	Name	SBO
s_1214	magnesium	
s_1212	magnesium	

Product

Table 1520: Properties of each product.

Id	Name	SBO
s_1212	magnesium	

Kinetic Law

Derived unit contains undeclared units

$$v_{379} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1214} \cdot \left(\frac{[\text{s}_1214]}{\text{ic1214}} \right) + \text{ep1212} \cdot \left(\frac{[\text{s}_1212]}{\text{ic1212}} \right) \right) \quad (761)$$

Table 1521: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.001	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.001	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1214			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1212			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.380 Reaction r_1923

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name Manganese (Mn+2) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1522: Properties of each reactant.

Id	Name	SBO
s_1257	Mn2+	

Modifiers

Table 1523: Properties of each modifier.

Id	Name	SBO
s_1257	Mn2+	
s_1255	Mn2+	

Product

Table 1524: Properties of each product.

Id	Name	SBO
s_1255	Mn2+	

Kinetic Law

Derived unit contains undeclared units

$$v_{380} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1257} \cdot \left(\frac{[\text{s}_1257]}{\text{ic1257}} \right) + \text{ep1255} \cdot \left(\frac{[\text{s}_1255]}{\text{ic1255}} \right) \right) \quad (763)$$

Table 1525: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.57150633208474 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.57150633208474 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1257			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1255			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.381 Reaction r_1939

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Name Methanol transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1526: Properties of each reactant.

Id	Name	SBO
s_1248	Methanol	

Modifier

Table 1527: Properties of each modifier.

Id	Name	SBO
s_1248	Methanol	

Product

Table 1528: Properties of each product.

Id	Name	SBO
s_1250	Methanol	

Kinetic Law

Derived unit contains undeclared units

$$v_{381} = \text{vol}(\text{cell}) \cdot \max \left(v0 \cdot \left(1 + \text{ep1248} \cdot \left(\frac{[s_{_1248}]}{\text{ic1248}} \right) \right), \text{zero_flux} \right) \quad (765)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (766)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (767)$$

Table 1529: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467884759 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1248			1.000	dimensionless	<input checked="" type="checkbox"/>

7.382 Reaction r_1943

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name molybdate transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1530: Properties of each reactant.

Id	Name	SBO
s_1263	Molybdate	

Modifiers

Table 1531: Properties of each modifier.

Id	Name	SBO
s_1263	Molybdate	
s_1261	Molybdate	

Product

Table 1532: Properties of each product.

Id	Name	SBO
s_1261	Molybdate	

Kinetic Law

Derived unit contains undeclared units

$$v_{382} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1263} \cdot \left(\frac{[\text{s_1263}]}{\text{ic1263}} \right) + \text{ep1261} \cdot \left(\frac{[\text{s_1261}]}{\text{ic1261}} \right) \right) \quad (769)$$

Table 1533: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$1.78686587096806 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$1.78686587096806 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1263			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1261			-1.000	dimensionless	<input checked="" type="checkbox"/>

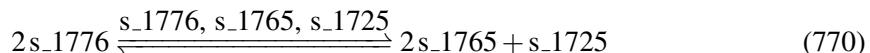
7.383 Reaction r_1944

This is a reversible reaction of one reactant forming two products influenced by three modifiers.

Name murein polymerizing transglycosylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1534: Properties of each reactant.

Id	Name
s_1776	Undecaprenyl-diphospho-N-acetylmuramoyl-(N-acetylglucosamine)-L-ala-D-glu-meso-2,6-diaminopim

Modifiers

Table 1535: Properties of each modifier.

Id	Name
s_1776	Undecaprenyl-diphospho-N-acetylmuramoyl-(N-acetylglucosamine)-L-ala-D-glu-meso-2,6-diaminopim
s_1765	Undecaprenyl diphosphate

Id	Name
s_1725	two linked disaccharide pentapeptide murein units (uncrosslinked, middle of chain)

Products

Table 1536: Properties of each product.

Id	Name	SBO
s_1765	Undecaprenyl diphosphate	
s_1725	two linked disaccharide pentapeptide murein units (uncrosslinked, middle of chain)	

Kinetic Law

Derived unit contains undeclared units

$$v_{383} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1776} \cdot \left(\frac{[\text{s_1776}]}{\text{ic1776}} \right) + \text{ep1765} \cdot \left(\frac{[\text{s_1765}]}{\text{ic1765}} \right) + \text{ep1725} \cdot \left(\frac{[\text{s_1725}]}{\text{ic1725}} \right) \right) \quad (771)$$

Table 1537: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.002	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.002	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1776			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1765			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep1725			-1.000	dimensionless	<input checked="" type="checkbox"/>

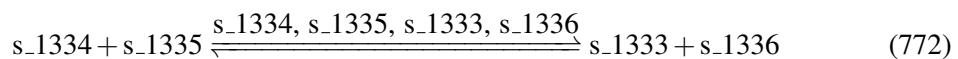
7.384 Reaction r_1962

This is a reversible reaction of two reactants forming two products influenced by four modifiers.

Name NAD(P) transhydrogenase (periplasm)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1538: Properties of each reactant.

Id	Name	SBO
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1335	Nicotinamide adenine dinucleotide phosphate	

Modifiers

Table 1539: Properties of each modifier.

Id	Name	SBO
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1335	Nicotinamide adenine dinucleotide phosphate	
s_1333	Nicotinamide adenine dinucleotide	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Products

Table 1540: Properties of each product.

Id	Name	SBO
s_1333	Nicotinamide adenine dinucleotide	
s_1336	Nicotinamide adenine dinucleotide phosphate - reduced	

Kinetic Law

Derived unit contains undeclared units

$$v_{384} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep1335} \cdot \left(\frac{[\text{s_1335}]}{\text{ic1335}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep1336} \cdot \left(\frac{[\text{s_1336}]}{\text{ic1336}} \right) \right) \quad (773)$$

Table 1541: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			1.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
v0			1.062	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1334			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1335			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1336			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.385 Reaction r_1968

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name nickel transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1542: Properties of each reactant.

Id	Name	SBO
s_{-1331}	nickel	

Modifiers

Table 1543: Properties of each modifier.

Id	Name	SBO
s_{-1331}	nickel	
s_{-1329}	nickel	

Product

Table 1544: Properties of each product.

Id	Name	SBO
s_{-1329}	nickel	

Kinetic Law

Derived unit contains undeclared units

$$v_{385} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1331} \cdot \left(\frac{[\text{s_1331}]}{\text{ic1331}} \right) + \text{ep1329} \cdot \left(\frac{[\text{s_1329}]}{\text{ic1329}} \right) \right) \quad (775)$$

Table 1545: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.47409051412934 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.47409051412934 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1331			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1329			-1.000	dimensionless	<input checked="" type="checkbox"/>

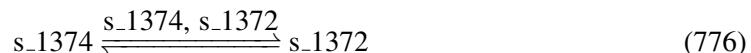
7.386 Reaction r_2002

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name oxygen transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1546: Properties of each reactant.

Id	Name	SBO
s_1374	O2	

Modifiers

Table 1547: Properties of each modifier.

Id	Name	SBO
s_1374	O2	
s_1372	O2	

Product

Table 1548: Properties of each product.

Id	Name	SBO
s_1372	O2	

Kinetic Law

Derived unit contains undeclared units

$$v_{386} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1374} \cdot \left(\frac{[\text{s_1374}]}{\text{ic1374}} \right) + \text{ep1372} \cdot \left(\frac{[\text{s_1372}]}{\text{ic1372}} \right) \right) \quad (777)$$

Table 1549: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.023	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1374			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1372			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.387 Reaction r_2011

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name phosphate transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1550: Properties of each reactant.

Id	Name	SBO
s_1432	Phosphate	

Modifiers

Table 1551: Properties of each modifier.

Id	Name	SBO
s_1432	Phosphate	
s_1430	Phosphate	

Product

Table 1552: Properties of each product.

Id	Name	SBO
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{387} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1432} \cdot \left(\frac{[\text{s}_1432]}{\text{ic1432}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s}_1430]}{\text{ic1430}} \right) \right) \quad (779)$$

Table 1553: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.131	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.131	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1432			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.388 Reaction r_2047

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name potassium transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1554: Properties of each reactant.

Id	Name	SBO
s_1496	potassium	

Modifiers

Table 1555: Properties of each modifier.

Id	Name	SBO
s_1496	potassium	
s_1494	potassium	

Product

Table 1556: Properties of each product.

Id	Name	SBO
s_1494	potassium	

Kinetic Law

Derived unit contains undeclared units

$$v_{388} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1496} \cdot \left(\frac{[\text{s}_1496]}{\text{ic1496}} \right) + \text{ep1494} \cdot \left(\frac{[\text{s}_1494]}{\text{ic1494}} \right) \right) \quad (781)$$

Table 1557: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.027	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.027	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1496			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1494			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.389 Reaction r_2108

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name sulfate transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1558: Properties of each reactant.

Id	Name	SBO
s_1611	Sulfate	

Modifiers

Table 1559: Properties of each modifier.

Id	Name	SBO
s_1611	Sulfate	
s_1609	Sulfate	

Product

Table 1560: Properties of each product.

Id	Name	SBO
s_1609	Sulfate	

Kinetic Law

Derived unit contains undeclared units

$$v_{389} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1611} \cdot \left(\frac{[\text{s}_{1611}]}{\text{ic1611}} \right) + \text{ep1609} \cdot \left(\frac{[\text{s}_{1609}]}{\text{ic1609}} \right) \right) \quad (783)$$

Table 1561: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.035	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.035	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1611			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1609			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.390 Reaction r_2167

This is a reversible reaction of one reactant forming one product influenced by two modifiers.

Name zinc (Zn+2) transport via diffusion (extracellular to periplasm)

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1562: Properties of each reactant.

Id	Name	SBO
s_1806	Zinc	

Modifiers

Table 1563: Properties of each modifier.

Id	Name	SBO
s_1806	Zinc	
s_1804	Zinc	

Product

Table 1564: Properties of each product.

Id	Name	SBO
s_1804	Zinc	

Kinetic Law

Derived unit contains undeclared units

$$v_{390} = \text{vol}(\text{cell}) \cdot v_0 \cdot \left(1 + \text{ep1806} \cdot \left(\frac{[\text{s_1806}]}{\text{ic1806}} \right) + \text{ep1804} \cdot \left(\frac{[\text{s_1804}]}{\text{ic1804}} \right) \right) \quad (785)$$

Table 1565: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$4.72342063565976 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$4.72342063565976 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1806			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1804			-1.000	dimensionless	<input checked="" type="checkbox"/>

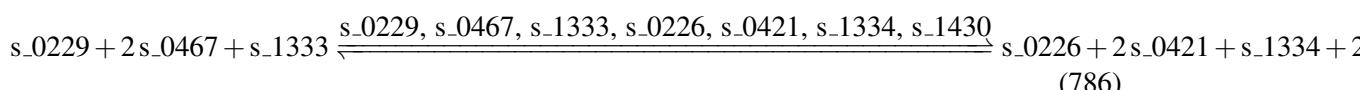
7.391 Reaction r_2195

This is a reversible reaction of three reactants forming four products influenced by seven modifiers.

Name 2-Octaprenylphenol hydroxylase (anaerobic)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1566: Properties of each reactant.

Id	Name	SBO
s_0229	2-Octaprenylphenol	
s_0467	ATP	
s_1333	Nicotinamide adenine dinucleotide	

Modifiers

Table 1567: Properties of each modifier.

Id	Name	SBO
s_0229	2-Octaprenylphenol	
s_0467	ATP	
s_1333	Nicotinamide adenine dinucleotide	
s_0226	2-Octaprenyl-6-hydroxyphenol	
s_0421	ADP	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1430	Phosphate	

Products

Table 1568: Properties of each product.

Id	Name	SBO
s_0226	2-Octaprenyl-6-hydroxyphenol	
s_0421	ADP	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{391} = \text{vol}(\text{cell}) \cdot v0 \\ \cdot \left(1 + \text{ep0229} \cdot \left(\frac{[\text{s_0229}]}{\text{ic0229}} \right) + \text{ep0467} \cdot \left(\frac{[\text{s_0467}]}{\text{ic0467}} \right) + \text{ep1333} \cdot \left(\frac{[\text{s_1333}]}{\text{ic1333}} \right) + \text{ep0226} \cdot \left(\frac{[\text{s_0226}]}{\text{ic0226}} \right) + \text{ep0421} \cdot \left(\frac{[\text{s_0421}]}{\text{ic0421}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s_1334}]}{\text{ic1334}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (787)$$

Table 1569: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317453432 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317453432 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0229			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0467			2.000	dimensionless	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0226			-1.000	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep0421			-2.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-2.000	dimensionless	<input checked="" type="checkbox"/>

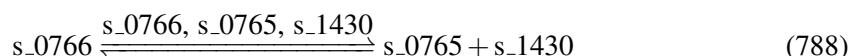
7.392 Reaction r_2310

This is a reversible reaction of one reactant forming two products influenced by three modifiers.

Name Dihydronopterin monophosphate dephosphorylase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1570: Properties of each reactant.

Id	Name	SBO
s_0766	Dihydronopterin monophosphate	

Modifiers

Table 1571: Properties of each modifier.

Id	Name	SBO
s_0766	Dihydronopterin monophosphate	
s_0765	Dihydronopterin	
s_1430	Phosphate	

Products

Table 1572: Properties of each product.

Id	Name	SBO
s_0765	Dihydronopterin	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{392} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0766} \cdot \left(\frac{[\text{s_0766}]}{\text{ic0766}} \right) + \text{ep0765} \cdot \left(\frac{[\text{s_0765}]}{\text{ic0765}} \right) + \text{ep1430} \cdot \left(\frac{[\text{s_1430}]}{\text{ic1430}} \right) \right) \quad (789)$$

Table 1573: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$9.26676951688061 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0766			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0765			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

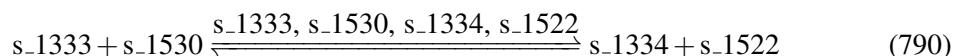
7.393 Reaction r_2519

This is a reversible reaction of two reactants forming two products influenced by four modifiers.

Name pyridoxine 5'-phosphate oxidase (anaerobic)

SBO:0000176 biochemical reaction

Reaction equation



Reactants

Table 1574: Properties of each reactant.

Id	Name	SBO
s_1333	Nicotinamide adenine dinucleotide	
s_1530	Pyridoxine 5'-phosphate	

Modifiers

Table 1575: Properties of each modifier.

Id	Name	SBO
s_1333	Nicotinamide adenine dinucleotide	
s_1530	Pyridoxine 5'-phosphate	
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1522	Pyridoxal 5'-phosphate	

Products

Table 1576: Properties of each product.

Id	Name	SBO
s_1334	Nicotinamide adenine dinucleotide - reduced	
s_1522	Pyridoxal 5'-phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{393} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep1333} \cdot \left(\frac{[\text{s}_1333]}{\text{ic1333}} \right) + \text{ep1530} \cdot \left(\frac{[\text{s}_1530]}{\text{ic1530}} \right) + \text{ep1334} \cdot \left(\frac{[\text{s}_1334]}{\text{ic1334}} \right) + \text{ep1522} \cdot \left(\frac{[\text{s}_1522]}{\text{ic1522}} \right) \right) \quad (791)$$

Table 1577: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892316991383 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892316991383 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1333			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1530			1.000	dimensionless	<input checked="" type="checkbox"/>
ep1334			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1522			-1.000	dimensionless	<input checked="" type="checkbox"/>

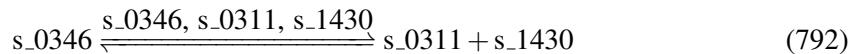
7.394 Reaction r_2521

This is a reversible reaction of one reactant forming two products influenced by three modifiers.

Name pyrimidine phosphatase

SBO:0000176 biochemical reaction

Reaction equation



Reactant

Table 1578: Properties of each reactant.

Id	Name	SBO
s_0346	5-Amino-6-(5'-phosphoribitylamo)uracil	

Modifiers

Table 1579: Properties of each modifier.

Id	Name	SBO
s_0346	5-Amino-6-(5'-phosphoribitylamo)uracil	
s_0311	4-(1-D-Ribitylamo)-5-aminouracil	
s_1430	Phosphate	

Products

Table 1580: Properties of each product.

Id	Name	SBO
s_0311	4-(1-D-Ribitylamo)-5-aminouracil	
s_1430	Phosphate	

Kinetic Law

Derived unit contains undeclared units

$$v_{394} = \text{vol}(\text{cell}) \cdot v0 \cdot \left(1 + \text{ep0346} \cdot \left(\frac{[s_{\text{0346}}]}{\text{ic0346}} \right) + \text{ep0311} \cdot \left(\frac{[s_{\text{0311}}]}{\text{ic0311}} \right) + \text{ep1430} \cdot \left(\frac{[s_{\text{1430}}]}{\text{ic1430}} \right) \right) \quad (793)$$

Table 1581: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.17784634458656 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0346			1.000	dimensionless	<input checked="" type="checkbox"/>
ep0311			-1.000	dimensionless	<input checked="" type="checkbox"/>
ep1430			-1.000	dimensionless	<input checked="" type="checkbox"/>

7.395 Reaction r_2533

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Name Sink needed to allow (2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran to leave system

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1582: Properties of each reactant.

Id	Name	SBO
s_0003	(2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran	

Modifier

Table 1583: Properties of each modifier.

Id	Name	SBO
s_0003	(2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran	

Product

Table 1584: Properties of each product.

Id	Name	SBO
s_1807	(2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran	

Id	Name	SBO
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Kinetic Law

Derived unit contains undeclared units

$$v_{395} = \text{vol}(\text{cell}) \cdot \max \left(v_0 \cdot \left(1 + \text{ep0003} \cdot \left(\frac{[\text{s_0003}]}{\text{ic0003}} \right) \right), \text{zero_flux} \right) \quad (795)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (796)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (797)$$

Table 1585: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$6.20554969142397 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0003			1.000	dimensionless	<input checked="" type="checkbox"/>

7.396 Reaction r_2534

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Name Sink needed to allow 5'-deoxyribose to leave system

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1586: Properties of each reactant.

Id	Name	SBO
s_0334	5'-deoxyribose	

Modifier

Table 1587: Properties of each modifier.

Id	Name	SBO
s_0334	5'-deoxyribose	

Product

Table 1588: Properties of each product.

Id	Name	SBO
s_1835	5'-deoxyribose	

Kinetic Law

Derived unit contains undeclared units

$$v_{396} = \text{vol}(\text{cell}) \cdot \max \left(v0 \cdot \left(1 + \text{ep0334} \cdot \left(\frac{[\text{s_0334}]}{\text{ic0334}} \right) \right), \text{zero_flux} \right) \quad (799)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (800)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (801)$$

Table 1589: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.11662651885034 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.11662651885034 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0334			1.000	dimensionless	<input checked="" type="checkbox"/>

7.397 Reaction r_2537

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Name Sink needed to allow p-Cresol to leave system

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1590: Properties of each reactant.

Id	Name	SBO
s_1407	p-Cresol	

Modifier

Table 1591: Properties of each modifier.

Id	Name	SBO
s_1407	p-Cresol	

Product

Table 1592: Properties of each product.

Id	Name	SBO
s_2072	p-Cresol	

Kinetic Law

Derived unit contains undeclared units

$$v_{397} = \text{vol}(\text{cell}) \cdot \max \left(v0 \cdot \left(1 + \text{ep1407} \cdot \left(\frac{[s_{-1407}]}{\text{ic1407}} \right) \right), \text{zero_flux} \right) \quad (803)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (804)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (805)$$

Table 1593: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$3.08892317229363 \cdot 10^{-5}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1407			1.000	dimensionless	<input checked="" type="checkbox"/>

7.398 Reaction r_2538

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Name Sink needed to allow S-Adenosyl-4-methylthio-2-oxobutanoate to leave system

SBO:0000185 transport reaction

Reaction equation



Reactant

Table 1594: Properties of each reactant.

Id	Name	SBO
s_1550	S-Adenosyl-4-methylthio-2-oxobutanoate	

Modifier

Table 1595: Properties of each modifier.

Id	Name	SBO
s_1550	S-Adenosyl-4-methylthio-2-oxobutanoate	

Product

Table 1596: Properties of each product.

Id	Name	SBO
s_2093	S-Adenosyl-4-methylthio-2-oxobutanoate	

Kinetic Law

Derived unit contains undeclared units

$$v_{398} = \text{vol}(\text{cell}) \cdot \max \left(v_0 \cdot \left(1 + \text{ep1550} \cdot \left(\frac{[\text{s_1550}]}{\text{ic1550}} \right) \right), \text{zero_flux} \right) \quad (807)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (808)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (809)$$

Table 1597: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			$2.77033467995043 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			$2.77033467995043 \cdot 10^{-7}$	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep1550			1.000	dimensionless	<input checked="" type="checkbox"/>

7.399 Reaction r_2584

This is an irreversible reaction of 65 reactants forming three products influenced by 65 modifiers.

Name growth

SBO:0000176 biochemical reaction

Reaction equation

$$2.23 \cdot 10^{-4} \text{s_0133} + 2.6 \cdot 10^{-5} \text{s_0378} + 2.23 \cdot 10^{-4} \text{s_0226} + 2.6 \cdot 10^{-4} \text{s_0380} + 0.5137 \text{s_1041} + 2.23 \cdot 10^{-4} \text{s_1552} + \dots \quad (810)$$

Reactants

Table 1598: Properties of each reactant.

Id	Name
s_0133	10-Formyltetrahydrofolate
s_0378	[2Fe-2S] iron-sulfur cluster
s_0226	2-Octaprenyl-6-hydroxyphenol
s_0380	[4Fe-4S] iron-sulfur cluster

Id	Name
s_1041	L-Alanine
s_1552	S-Adenosyl-L-methionine
s_1061	L-Arginine
s_1068	L-Asparagine
s_1072	L-Aspartate
s_0467	ATP
s_0480	bis-molybdopterin guanine dinucleotide
s_0476	Biotin
s_0497	Calcium
s_0520	Chloride
s_0555	Coenzyme A
s_0546	Co2+
s_0575	CTP
s_0579	Cu2+
s_1083	L-Cysteine
s_0726	dATP
s_0731	dCTP
s_0760	dGTP
s_0805	dTTP
s_0859	Flavin adenine dinucleotide oxidized
s_0838	Fe2+
s_0841	Fe3+
s_1101	L-Glutamine
s_1095	L-Glutamate
s_0929	Glycine
s_0945	GTP
s_1106	L-Histidine
s_1119	L-Isoleucine
s_1494	potassium
s_1127	L-Leucine
s_1131	L-Lysine
s_1141	L-Methionine
s_1212	magnesium
s_0336	5,10-Methylenetetrahydrofolate
s_1255	Mn2+
s_1261	Molybdate
s_1333	Nicotinamide adenine dinucleotide
s_1335	Nicotinamide adenine dinucleotide phosphate
s_0451	Ammonium
s_1329	nickel
s_1437	phosphatidylethanolamine (dihexadecanoyl, n-C16:0)
s_1435	phosphatidylethanolamine (dihexadec-9enoyl, n-C16:1)

Id	Name
s_1151	L-Phenylalanine
s_1508	Protoheme
s_1155	L-Proline
s_1522	Pyridoxal 5'-phosphate
s_1546	Riboflavin
s_1170	L-Serine
s_1577	Siroheme
s_1609	Sulfate
s_0337	5,6,7,8-Tetrahydrofolate
s_1644	Thiamine diphosphate
s_1179	L-Threonine
s_1185	L-Tryptophan
s_1189	L-Tyrosine
s_1765	Undecaprenyl diphosphate
s_1792	UTP
s_1193	L-Valine
s_1804	Zinc
s_1033	KDO(2)-lipid IV(A)
s_1719	two disaccharide linked murein units, pentapeptide crosslinked tetrapeptide (A2pm->D-ala) (middle of chain)

Modifiers

Table 1599: Properties of each modifier.

Id	Name
s_0133	10-Formyltetrahydrofolate
s_0378	[2Fe-2S] iron-sulfur cluster
s_0226	2-Octaprenyl-6-hydroxyphenol
s_0380	[4Fe-4S] iron-sulfur cluster
s_1041	L-Alanine
s_1552	S-Adenosyl-L-methionine
s_1061	L-Arginine
s_1068	L-Asparagine
s_1072	L-Aspartate
s_0467	ATP
s_0480	bis-molybdopterin guanine dinucleotide
s_0476	Biotin
s_0497	Calcium
s_0520	Chloride
s_0555	Coenzyme A
s_0546	Co2+

Id	Name
s_0575	CTP
s_0579	Cu2+
s_1083	L-Cysteine
s_0726	dATP
s_0731	dCTP
s_0760	dGTP
s_0805	dTTP
s_0859	Flavin adenine dinucleotide oxidized
s_0838	Fe2+
s_0841	Fe3+
s_1101	L-Glutamine
s_1095	L-Glutamate
s_0929	Glycine
s_0945	GTP
s_1106	L-Histidine
s_1119	L-Isoleucine
s_1494	potassium
s_1127	L-Leucine
s_1131	L-Lysine
s_1141	L-Methionine
s_1212	magnesium
s_0336	5,10-Methylenetetrahydrofolate
s_1255	Mn2+
s_1261	Molybdate
s_1333	Nicotinamide adenine dinucleotide
s_1335	Nicotinamide adenine dinucleotide phosphate
s_0451	Ammonium
s_1329	nickel
s_1437	phosphatidylethanolamine (dihexadecanoyl, n-C16:0)
s_1435	phosphatidylethanolamine (dihexadec-9enoyl, n-C16:1)
s_1151	L-Phenylalanine
s_1508	Protoheme
s_1155	L-Proline
s_1522	Pyridoxal 5'-phosphate
s_1546	Riboflavin
s_1170	L-Serine
s_1577	Siroheme
s_1609	Sulfate
s_0337	5,6,7,8-Tetrahydrofolate
s_1644	Thiamine diphosphate
s_1179	L-Threonine
s_1185	L-Tryptophan

Id	Name
s_1189	L-Tyrosine
s_1765	Undecaprenyl diphosphate
s_1792	UTP
s_1193	L-Valine
s_1804	Zinc
s_1033	KDO(2)-lipid IV(A)
s_1719	two disacharide linked murein units, pentapeptide crosslinked tetrapeptide (A2pm->D-ala) (middle of chain)

Products

Table 1600: Properties of each product.

Id	Name	SBO
s_0421	ADP	
s_1430	Phosphate	
s_0783	Diphosphate	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned}
v_{399} = \text{vol}(\text{cell}) & \quad (811) \\
& \cdot \max \left(v0 \cdot \left(1 + \text{ep}0133 \cdot \left(\frac{[s_0133]}{\text{ic}0133} \right) + \text{ep}0378 \cdot \left(\frac{[s_0378]}{\text{ic}0378} \right) + \text{ep}0226 \cdot \left(\frac{[s_0226]}{\text{ic}0226} \right) \right. \right. \\
& + \text{ep}0380 \cdot \left(\frac{[s_0380]}{\text{ic}0380} \right) + \text{ep}1041 \cdot \left(\frac{[s_1041]}{\text{ic}1041} \right) + \text{ep}1552 \cdot \left(\frac{[s_1552]}{\text{ic}1552} \right) + \text{ep}1061 \\
& \cdot \left(\frac{[s_1061]}{\text{ic}1061} \right) + \text{ep}1068 \cdot \left(\frac{[s_1068]}{\text{ic}1068} \right) + \text{ep}1072 \cdot \left(\frac{[s_1072]}{\text{ic}1072} \right) + \text{ep}0467 \cdot \left(\frac{[s_0467]}{\text{ic}0467} \right) \\
& + \text{ep}0480 \cdot \left(\frac{[s_0480]}{\text{ic}0480} \right) + \text{ep}0476 \cdot \left(\frac{[s_0476]}{\text{ic}0476} \right) + \text{ep}0497 \cdot \left(\frac{[s_0497]}{\text{ic}0497} \right) + \text{ep}0520 \\
& \cdot \left(\frac{[s_0520]}{\text{ic}0520} \right) + \text{ep}0555 \cdot \left(\frac{[s_0555]}{\text{ic}0555} \right) + \text{ep}0546 \cdot \left(\frac{[s_0546]}{\text{ic}0546} \right) + \text{ep}0575 \cdot \left(\frac{[s_0575]}{\text{ic}0575} \right) \\
& + \text{ep}0579 \cdot \left(\frac{[s_0579]}{\text{ic}0579} \right) + \text{ep}1083 \cdot \left(\frac{[s_1083]}{\text{ic}1083} \right) + \text{ep}0726 \cdot \left(\frac{[s_0726]}{\text{ic}0726} \right) + \text{ep}0731 \\
& \cdot \left(\frac{[s_0731]}{\text{ic}0731} \right) + \text{ep}0760 \cdot \left(\frac{[s_0760]}{\text{ic}0760} \right) + \text{ep}0805 \cdot \left(\frac{[s_0805]}{\text{ic}0805} \right) + \text{ep}0859 \cdot \left(\frac{[s_0859]}{\text{ic}0859} \right) \\
& + \text{ep}0838 \cdot \left(\frac{[s_0838]}{\text{ic}0838} \right) + \text{ep}0841 \cdot \left(\frac{[s_0841]}{\text{ic}0841} \right) + \text{ep}1101 \cdot \left(\frac{[s_1101]}{\text{ic}1101} \right) + \text{ep}1095 \\
& \cdot \left(\frac{[s_1095]}{\text{ic}1095} \right) + \text{ep}0929 \cdot \left(\frac{[s_0929]}{\text{ic}0929} \right) + \text{ep}0945 \cdot \left(\frac{[s_0945]}{\text{ic}0945} \right) + \text{ep}1106 \cdot \left(\frac{[s_1106]}{\text{ic}1106} \right) \\
& + \text{ep}1119 \cdot \left(\frac{[s_1119]}{\text{ic}1119} \right) + \text{ep}1494 \cdot \left(\frac{[s_1494]}{\text{ic}1494} \right) + \text{ep}1127 \cdot \left(\frac{[s_1127]}{\text{ic}1127} \right) + \text{ep}1131 \\
& \cdot \left(\frac{[s_1131]}{\text{ic}1131} \right) + \text{ep}1141 \cdot \left(\frac{[s_1141]}{\text{ic}1141} \right) + \text{ep}1212 \cdot \left(\frac{[s_1212]}{\text{ic}1212} \right) + \text{ep}0336 \cdot \left(\frac{[s_0336]}{\text{ic}0336} \right) \\
& + \text{ep}1255 \cdot \left(\frac{[s_1255]}{\text{ic}1255} \right) + \text{ep}1261 \cdot \left(\frac{[s_1261]}{\text{ic}1261} \right) + \text{ep}1333 \cdot \left(\frac{[s_1333]}{\text{ic}1333} \right) + \text{ep}1335 \cdot \left(\frac{[s_1335]}{\text{ic}1335} \right) \\
& + \text{ep}0451 \cdot \left(\frac{[s_0451]}{\text{ic}0451} \right) + \text{ep}1329 \cdot \left(\frac{[s_1329]}{\text{ic}1329} \right) + \text{ep}1437 \cdot \left(\frac{[s_1437]}{\text{ic}1437} \right) + \text{ep}1435 \cdot \left(\frac{[s_1435]}{\text{ic}1435} \right) \\
& + \text{ep}1151 \cdot \left(\frac{[s_1151]}{\text{ic}1151} \right) + \text{ep}1508 \cdot \left(\frac{[s_1508]}{\text{ic}1508} \right) + \text{ep}1155 \cdot \left(\frac{[s_1155]}{\text{ic}1155} \right) + \text{ep}1522 \cdot \left(\frac{[s_1522]}{\text{ic}1522} \right) \\
& + \text{ep}1546 \cdot \left(\frac{[s_1546]}{\text{ic}1546} \right) + \text{ep}1170 \cdot \left(\frac{[s_1170]}{\text{ic}1170} \right) + \text{ep}1577 \cdot \left(\frac{[s_1577]}{\text{ic}1577} \right) + \text{ep}1609 \cdot \left(\frac{[s_1609]}{\text{ic}1609} \right) \\
& + \text{ep}0337 \cdot \left(\frac{[s_0337]}{\text{ic}0337} \right) + \text{ep}1644 \cdot \left(\frac{[s_1644]}{\text{ic}1644} \right) + \text{ep}1179 \cdot \left(\frac{[s_1179]}{\text{ic}1179} \right) + \text{ep}1185 \cdot \left(\frac{[s_1185]}{\text{ic}1185} \right) \\
& + \text{ep}1189 \cdot \left(\frac{[s_1189]}{\text{ic}1189} \right) + \text{ep}1765 \cdot \left(\frac{[s_1765]}{\text{ic}1765} \right) + \text{ep}1792 \cdot \left(\frac{[s_1792]}{\text{ic}1792} \right) + \text{ep}1193 \cdot \left(\frac{[s_1193]}{\text{ic}1193} \right) \\
& \left. + \text{ep}1804 \cdot \left(\frac{[s_1804]}{\text{ic}1804} \right) + \text{ep}1033 \cdot \left(\frac{[s_1033]}{\text{ic}1033} \right) + \text{ep}1719 \cdot \left(\frac{[s_1719]}{\text{ic}1719} \right) \right), \text{zero_flux} \Big)
\end{aligned}$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (812)$$

$$\max(x, y) = \frac{x + y + |x - y|}{2} \quad (813)$$

Table 1601: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
FLUX_VALUE			0.139	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
v0			0.139	$\text{mmol} \cdot \text{l}^{-1} \cdot \text{s}^{-1}$	<input checked="" type="checkbox"/>
ep0133			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep0378			$2.6 \cdot 10^{-5}$	dimensionless	<input checked="" type="checkbox"/>
ep0226			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep0380			$2.6 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1041			0.514	dimensionless	<input checked="" type="checkbox"/>
ep1552			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1061			0.296	dimensionless	<input checked="" type="checkbox"/>
ep1068			0.241	dimensionless	<input checked="" type="checkbox"/>
ep1072			0.241	dimensionless	<input checked="" type="checkbox"/>
ep0467			54.120	dimensionless	<input checked="" type="checkbox"/>
ep0480			$1.22 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep0476			$2 \cdot 10^{-6}$	dimensionless	<input checked="" type="checkbox"/>
ep0497			0.005	dimensionless	<input checked="" type="checkbox"/>
ep0520			0.005	dimensionless	<input checked="" type="checkbox"/>
ep0555			$5.76 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep0546			$2.5 \cdot 10^{-5}$	dimensionless	<input checked="" type="checkbox"/>
ep0575			0.134	dimensionless	<input checked="" type="checkbox"/>
ep0579			$7.09 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1083			0.092	dimensionless	<input checked="" type="checkbox"/>
ep0726			0.026	dimensionless	<input checked="" type="checkbox"/>
ep0731			0.027	dimensionless	<input checked="" type="checkbox"/>
ep0760			0.027	dimensionless	<input checked="" type="checkbox"/>
ep0805			0.026	dimensionless	<input checked="" type="checkbox"/>
ep0859			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep0838			0.007	dimensionless	<input checked="" type="checkbox"/>
ep0841			0.008	dimensionless	<input checked="" type="checkbox"/>
ep1101			0.263	dimensionless	<input checked="" type="checkbox"/>
ep1095			0.263	dimensionless	<input checked="" type="checkbox"/>
ep0929			0.613	dimensionless	<input checked="" type="checkbox"/>
ep0945			0.215	dimensionless	<input checked="" type="checkbox"/>
ep1106			0.095	dimensionless	<input checked="" type="checkbox"/>
ep1119			0.291	dimensionless	<input checked="" type="checkbox"/>
ep1494			0.195	dimensionless	<input checked="" type="checkbox"/>
ep1127			0.451	dimensionless	<input checked="" type="checkbox"/>
ep1131			0.343	dimensionless	<input checked="" type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
ep1141			0.154	dimensionless	<input checked="" type="checkbox"/>
ep1212			0.009	dimensionless	<input checked="" type="checkbox"/>
ep0336			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1255			$6.91 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1261			$7 \cdot 10^{-6}$	dimensionless	<input checked="" type="checkbox"/>
ep1333			0.002	dimensionless	<input checked="" type="checkbox"/>
ep1335			$4.47 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep0451			0.013	dimensionless	<input checked="" type="checkbox"/>
ep1329			$3.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1437			0.064	dimensionless	<input checked="" type="checkbox"/>
ep1435			0.075	dimensionless	<input checked="" type="checkbox"/>
ep1151			0.185	dimensionless	<input checked="" type="checkbox"/>
ep1508			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1155			0.221	dimensionless	<input checked="" type="checkbox"/>
ep1522			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1546			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1170			0.216	dimensionless	<input checked="" type="checkbox"/>
ep1577			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1609			0.004	dimensionless	<input checked="" type="checkbox"/>
ep0337			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1644			$2.23 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1179			0.254	dimensionless	<input checked="" type="checkbox"/>
ep1185			0.057	dimensionless	<input checked="" type="checkbox"/>
ep1189			0.138	dimensionless	<input checked="" type="checkbox"/>
ep1765			$5.5 \cdot 10^{-5}$	dimensionless	<input checked="" type="checkbox"/>
ep1792			0.144	dimensionless	<input checked="" type="checkbox"/>
ep1193			0.423	dimensionless	<input checked="" type="checkbox"/>
ep1804			$3.41 \cdot 10^{-4}$	dimensionless	<input checked="" type="checkbox"/>
ep1033			0.019	dimensionless	<input checked="" type="checkbox"/>
ep1719			0.014	dimensionless	<input checked="" type="checkbox"/>

8 Derived Rate Equations

When interpreted as an ordinary differential equation framework, this model implies the following set of equations for the rates of change of each species.

8.1 Species s_0003

Name (2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran

SBO:0000247 simple chemical

Notes iJO1366:M_mththf_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2533](#) and as a product in [r_0001](#) and as a modifier in [r_0001](#), [r_2533](#)).

$$\frac{d}{dt}s_{-0003} = v_1 - v_{395} \quad (814)$$

8.2 Species s_0004

Name (2R,4S)-2-methyl-2,4-dihydroxydihydrofuran-3-one

SBO:0000247 simple chemical

Notes iJO1366:M_mdhdhf_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0001](#) and as a product in [r_0176](#) and as a modifier in [r_0001](#), [r_0176](#)).

$$\frac{d}{dt}s_{-0004} = v_{55} - v_1 \quad (815)$$

8.3 Species s_0017

Name (R)-2,3-Dihydroxy-3-methylbutanoate

SBO:0000247 simple chemical

Notes iJO1366:M_23dhmb_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0517](#) and as a product in [r_0811](#) and as a modifier in [r_0517](#), [r_0811](#)).

$$\frac{d}{dt}s_{-0017} = v_{219} - v_{146} \quad (816)$$

8.4 Species s_0018

Name (R)-2,3-Dihydroxy-3-methylpentanoate

SBO:0000247 simple chemical

Notes iJO1366:M_23dhmp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0518](#) and as a product in [r_0812](#) and as a modifier in [r_0518](#), [r_0812](#)).

$$\frac{d}{dt}s_{-0018} = v_{220} - v_{147} \quad (817)$$

8.5 Species [s_0028](#)

Name (R)-3-Hydroxytetradecanoyl-[acyl-carrier protein]

SBO:0000247 simple chemical

Notes iJO1366:M_3hmrsACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_1378](#), [r_1391](#) and as a product in [r_0154](#) and as a modifier in [r_0154](#), [r_1378](#), [r_1391](#)).

$$\frac{d}{dt}s_{-0028} = v_{52} - v_{345} - v_{349} \quad (818)$$

8.6 Species [s_0029](#)

Name (R)-Glycerate

SBO:0000247 simple chemical

Notes iJO1366:M_glyc_DASH_R_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0697](#) and as a product in [r_1335](#) and as a modifier in [r_0697](#), [r_1335](#)).

$$\frac{d}{dt}s_{-0029} = v_{327} - v_{180} \quad (819)$$

8.7 Species [s_0032](#)

Name (R)-Pantoate

SBO:0000247 simple chemical

Notes iJO1366:M_pant_DASH_R_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1076](#) and as a product in [r_0063](#) and as a modifier in [r_0063](#), [r_1076](#)).

$$\frac{d}{dt}s_{-0032} = v_{13} - v_{262} \quad (820)$$

8.8 Species s_0033

Name (R)-Pantothenate

SBO:0000247 simple chemical

Notes iJO1366:M_pnto_DASH_R_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1075](#) and as a product in [r_1076](#) and as a modifier in [r_1075](#), [r_1076](#)).

$$\frac{d}{dt}s_{0033} = v_{262} - v_{261} \quad (821)$$

8.9 Species s_0040

Name (S)-2-[5-Amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxamido]succinate

SBO:0000247 simple chemical

Notes iJO1366:M_25aics_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0302](#) and as a product in [r_1210](#) and as a modifier in [r_0302](#), [r_1210](#)).

$$\frac{d}{dt}s_{0040} = v_{286} - v_{96} \quad (822)$$

8.10 Species s_0041

Name (S)-2-Aceto-2-hydroxybutanoate

SBO:0000247 simple chemical

Notes iJO1366:M_2ahbut_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0812](#) and as a product in [r_0038](#) and as a modifier in [r_0038](#), [r_0812](#)).

$$\frac{d}{dt}s_{0041} = v_9 - v_{220} \quad (823)$$

8.11 Species s_0042

Name (S)-2-Acetolactate

SBO:0000247 simple chemical

Notes iJO1366:M_alac_DASH_S_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0811](#) and as a product in [r_0227](#) and as a modifier in [r_0227](#), [r_0811](#)).

$$\frac{d}{dt}s_{0042} = v_{69} - v_{219} \quad (824)$$

8.12 Species s_0043

Name (S)-3-Hydroxybutanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3hbcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0120](#) and as a product in [r_0135](#) and as a modifier in [r_0120](#), [r_0135](#)).

$$\frac{d}{dt}s_{0043} = v_{42} - v_{29} \quad (825)$$

8.13 Species s_0044

Name (S)-3-Hydroxydecanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3hdcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0121](#) and as a product in [r_0128](#) and as a modifier in [r_0121](#), [r_0128](#)).

$$\frac{d}{dt}s_{0044} = v_{36} - v_{30} \quad (826)$$

8.14 Species s_0045

Name (S)-3-Hydroxydodecanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3hddcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0122](#) and as a product in [r_0129](#) and as a modifier in [r_0122](#), [r_0129](#)).

$$\frac{d}{dt}s_{0045} = v_{37} - v_{31} \quad (827)$$

8.15 Species s_0046

Name (S)-3-Hydroxyhexadecanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3hhdcos_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0123](#) and as a product in [r_0130](#) and as a modifier in [r_0123](#), [r_0130](#)).

$$\frac{d}{dt}s_{0046} = v_{38} - v_{32} \quad (828)$$

8.16 Species s_0047

Name (S)-3-Hydroxyhexanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3hhcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0124](#) and as a product in [r_0131](#) and as a modifier in [r_0124](#), [r_0131](#)).

$$\frac{d}{dt}s_{0047} = v_{39} - v_{33} \quad (829)$$

8.17 Species s_0049

Name (S)-3-Hydroxyoctanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3hocoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0126](#) and as a product in [r_0133](#) and as a modifier in [r_0126](#), [r_0133](#)).

$$\frac{d}{dt}s_{0049} = v_{40} - v_{34} \quad (830)$$

8.18 Species s_0050

Name (S)-3-Hydroxytetradecanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3htdcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0127](#) and as a product in [r_0134](#) and as a modifier in [r_0127](#), [r_0134](#)).

$$\frac{d}{dt}s_{0050} = v_{41} - v_{35} \quad (831)$$

8.19 Species s_0051

Name (S)-3-Methyl-2-oxopentanoate

SBO:0000247 simple chemical

Notes iJO1366:M_3mop_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0808](#) and as a product in [r_0518](#) and as a modifier in [r_0518](#), [r_0808](#)).

$$\frac{d}{dt}s_{0051} = v_{147} - v_{218} \quad (832)$$

8.20 Species s_0052

Name (S)-Dihydroorotate

SBO:0000247 simple chemical

Notes iJO1366:M_dhor_DASH_S_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0501](#), [r_0512](#) and as a product in [r_0511](#) and as a modifier in [r_0501](#), [r_0511](#), [r_0512](#)).

$$\frac{d}{dt}s_{0052} = v_{143} - v_{136} - v_{144} \quad (833)$$

8.21 Species s_0073

Name 1,2-dihexadec-9-enoyl-sn-glycerol 3-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_pa161_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0419](#) and as a product in [r_0012](#) and as a modifier in [r_0012](#), [r_0419](#)).

$$\frac{d}{dt}s_{0073} = v_5 - v_{119} \quad (834)$$

8.22 Species s_0075

Name 1,2-dihexadecanoyl-sn-glycerol 3-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_pa160_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0418](#) and as a product in [r_0013](#) and as a modifier in [r_0013](#), [r_0418](#)).

$$\frac{d}{dt}s_{0075} = v_6 - v_{118} \quad (835)$$

8.23 Species s_0096

Name 1-(2-Carboxyphenylamino)-1-deoxy-D-ribulose 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_2cpr5p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0788](#) and as a product in [r_1211](#) and as a modifier in [r_0788](#), [r_1211](#)).

$$\frac{d}{dt}s_{0096} = v_{287} - v_{209} \quad (836)$$

8.24 Species s_0097

Name 1-(5-Phosphoribosyl)-5-[(5-phosphoribosylamino)methylideneamino]imidazole-4-carboxamide

SBO:0000247 simple chemical

Notes iJO1366:M_prfp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0008](#) and as a product in [r_1204](#) and as a modifier in [r_0008](#), [r_1204](#)).

$$\frac{d}{dt}s_{0097} = v_{280} - v_2 \quad (837)$$

8.25 Species s_0098

Name 1-(5-Phosphoribosyl)-AMP

SBO:0000247 simple chemical

Notes iJO1366:M_prbamp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1204](#) and as a product in [r_1205](#) and as a modifier in [r_1204](#), [r_1205](#)).

$$\frac{d}{dt}s_{0098} = v_{281} - v_{280} \quad (838)$$

8.26 Species s_0099

Name 1-(5-Phosphoribosyl)-ATP

SBO:0000247 simple chemical

Notes iJO1366:M_prbatp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1205](#) and as a product in [r_0374](#) and as a modifier in [r_0374](#), [r_1205](#)).

$$\frac{d}{dt}s_{0099} = v_{112} - v_{281} \quad (839)$$

8.27 Species s_0116

Name 1-deoxy-D-xylulose 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_dxyl5p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in eight reactions (as a reactant in [r_0011](#), [r_1245](#), [r_1346](#) and as a product in [r_0009](#) and as a modifier in [r_0009](#), [r_0011](#), [r_1245](#), [r_1346](#)).

$$\frac{d}{dt}s_{0116} = v_3 - v_4 - v_{300} - v_{332} \quad (840)$$

8.28 Species s_0119

Name 1-hexadec-9-enoyl-sn-glycerol 3-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_1hdec9eg3p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0012](#) and as a product in [r_0707](#) and as a modifier in [r_0012](#), [r_0707](#)).

$$\frac{d}{dt}s_{0119} = v_{182} - v_5 \quad (841)$$

8.29 Species s_0121

Name 1-hexadecanoyl-sn-glycerol 3-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_1hdecg3p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0013](#) and as a product in [r_0706](#) and as a modifier in [r_0013](#), [r_0706](#)).

$$\frac{d}{dt}s_{0121} = v_{181} - v_6 \quad (842)$$

8.30 Species s_0123

Name 1-hydroxy-2-methyl-2-(E)-butenyl 4-diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_h2mb4p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0014](#), [r_0015](#) and as a product in [r_0084](#) and as a modifier in [r_0014](#), [r_0015](#), [r_0084](#)).

$$\frac{d}{dt}s_{0123} = v_{17} - v_7 - v_8 \quad (843)$$

8.31 Species s_0128

Name 1-Pyrroline-5-carboxylate

SBO:0000247 simple chemical

Notes iJO1366:M_1pyr5c_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1250](#) and as a product in [r_0835](#) and as a modifier in [r_0835](#), [r_1250](#)).

$$\frac{d}{dt}s_{0128} = v_{223} - v_{301} \quad (844)$$

8.32 Species s_0133

Name 10-Formyltetrahydrofolate

SBO:0000247 simple chemical

Notes iJO1366:M_10fthf_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_1209](#), [r_2584](#) and as a product in [r_0622](#), [r_0950](#) and as a modifier in [r_0622](#), [r_0950](#), [r_1209](#), [r_2584](#)).

$$\frac{d}{dt}s_{0133} = v_{162} + v_{232} - v_{285} - 2.23 \cdot 10^{-4}v_{399} \quad (845)$$

8.33 Species s_0147

Name 2,3,2'3'-Tetrakis(beta-hydroxymyristoyl)-D-glucosaminyl-1,6-beta-D-glucosamine 1,4'-bisphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_lipidA_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0102](#) and as a product in [r_1337](#) and as a modifier in [r_0102](#), [r_1337](#)).

$$\frac{d}{dt}s_{0147} = v_{328} - v_{25} \quad (846)$$

8.34 Species s_0148

Name 2,3,4,5-Tetrahydrodipicolinate

SBO:0000247 simple chemical

Notes iJO1366:M_thdp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1338](#) and as a product in [r_0502](#) and as a modifier in [r_0502](#), [r_1338](#)).

$$\frac{d}{dt}s_{0148} = v_{137} - v_{329} \quad (847)$$

8.35 Species s_0149

Name 2,3-Bis(3-hydroxytetradecanoyl)-beta-D-glucosaminyl 1-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_lipidX_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0857](#) and as a product in [r_1402](#) and as a modifier in [r_0857](#), [r_1402](#)).

$$\frac{d}{dt}s_{0149} = v_{356} - v_{227} \quad (848)$$

8.36 Species s_0155

Name 2,3-Dihydrodipicolinate

SBO:0000247 simple chemical

Notes iJO1366:M_23dhdp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0502](#) and as a product in [r_0503](#) and as a modifier in [r_0502](#), [r_0503](#)).

$$\frac{d}{dt}s_{0155} = v_{138} - v_{137} \quad (849)$$

8.37 Species s_0160

Name 2,5-Diamino-6-(ribosylamino)-4-(3H)-pyrimidinone 5'-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_25drapp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0498](#) and as a product in [r_0745](#) and as a modifier in [r_0498](#), [r_0745](#)).

$$\frac{d}{dt}s_{0160} = v_{192} - v_{133} \quad (850)$$

8.38 Species s_0162

Name 2-(Formamido)-N1-(5-phospho-D-ribosyl)acetamidine

SBO:0000247 simple chemical

Notes iJO1366:M_fpram_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1208](#) and as a product in [r_1212](#) and as a modifier in [r_1208](#), [r_1212](#)).

$$\frac{d}{dt}s_{0162} = v_{288} - v_{284} \quad (851)$$

8.39 Species s_0191

Name 2-Amino-4-hydroxy-6-(erythro-1,2,3-trihydroxypropyl)dihydropteridine triphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_ahdt_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0510](#) and as a product in [r_0744](#) and as a modifier in [r_0510](#), [r_0744](#)).

$$\frac{d}{dt}s_{0191} = v_{191} - v_{142} \quad (852)$$

8.40 Species s_0193

Name 2-C-methyl-D-erythritol 2,4-cyclodiphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_2mectp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0084](#) and as a product in [r_0053](#) and as a modifier in [r_0053](#), [r_0084](#)).

$$\frac{d}{dt}s_{0193} = v_{10} - v_{17} \quad (853)$$

8.41 Species s_0194

Name 2-C-methyl-D-erythritol 4-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_2me4p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0054](#) and as a product in [r_0011](#) and as a modifier in [r_0011](#), [r_0054](#)).

$$\frac{d}{dt}s_{0194} = v_4 - v_{11} \quad (854)$$

8.42 Species s_0195

Name 2-Dehydro-3-deoxy-D-arabino-heptonate 7-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_2dda7p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0099](#) and as a product in [r_0101](#) and as a modifier in [r_0099](#), [r_0101](#)).

$$\frac{d}{dt}s_{0195} = v_{24} - v_{22} \quad (855)$$

8.43 Species s_0201

Name 2-Dehydro-3-deoxy-D-gluconate 6-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_2ddg6p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0056](#) and as a product in [r_0217](#) and as a modifier in [r_0056](#), [r_0217](#)).

$$\frac{d}{dt}s_{0201} = v_{64} - v_{12} \quad (856)$$

8.44 Species s_0203

Name 2-Dehydropantoate

SBO:0000247 simple chemical

Notes iJO1366:M_2dhp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0063](#) and as a product in [r_0143](#) and as a modifier in [r_0063](#), [r_0143](#)).

$$\frac{d}{dt}s_{0203} = v_{45} - v_{13} \quad (857)$$

8.45 Species s_0214

Name 2-Hydroxy-3-oxopropanoate

SBO:0000247 simple chemical

Notes iJO1366:M_2h3oppan_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1335](#) and as a product in [r_0739](#) and as a modifier in [r_0739](#), [r_1335](#)).

$$\frac{d}{dt}s_{0214} = v_{189} - v_{327} \quad (858)$$

8.46 Species s_0217

Name 2-Isopropylmaleate

SBO:0000247 simple chemical

Notes iJO1366:M_2ippm_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0138](#) and as a product in [r_0066](#) and as a modifier in [r_0066](#), [r_0138](#)).

$$\frac{d}{dt}s_{0217} = v_{14} - v_{43} \quad (859)$$

8.47 Species s_0218

Name 2-Methyl-4-amino-5-hydroxymethylpyrimidine diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_2mahmp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1344](#) and as a product in [r_1198](#) and as a modifier in [r_1198](#), [r_1344](#)).

$$\frac{d}{dt}s_{0218} = v_{276} - v_{330} \quad (860)$$

8.48 Species s_0226

Name 2-Octaprenyl-6-hydroxyphenol

SBO:0000247 simple chemical

Notes iJO1366:M_2ohph_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_2195](#) and as a modifier in [r_2195](#), [r_2584](#)).

$$\frac{d}{dt}s_{0226} = v_{391} - 2.23 \cdot 10^{-4}v_{399} \quad (861)$$

8.49 Species s_0229

Name 2-Octaprenylphenol

SBO:0000247 simple chemical

Notes iJO1366:M_2oph_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2195](#) and as a product in [r_1064](#) and as a modifier in [r_1064](#), [r_2195](#)).

$$\frac{d}{dt}s_{0229} = v_{256} - v_{391} \quad (862)$$

8.50 Species s_0231

Name 2-Oxo-3-hydroxy-4-phosphobutanoate

SBO:0000247 simple chemical

Notes iJO1366:M_ohpb_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1054](#) and as a product in [r_0573](#) and as a modifier in [r_0573](#), [r_1054](#)).

$$\frac{d}{dt}s_{0231} = v_{154} - v_{253} \quad (863)$$

8.51 Species s_0232

Name 2-Oxobutanoate

SBO:0000247 simple chemical

Notes iJO1366:M_2obut_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0038](#) and as a product in [r_0847](#) and as a modifier in [r_0038](#), [r_0847](#)).

$$\frac{d}{dt}s_{0232} = v_{224} - v_9 \quad (864)$$

8.52 Species s_0233

Name 2-Oxoglutarate

SBO:0000247 simple chemical

Notes iJO1366:M_akg_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 28 reactions (as a reactant in [r_0675](#) and as a product in [r_0245](#), [r_0370](#), [r_0765](#), [r_0806](#), [r_0808](#), [r_0815](#), [r_0854](#), [r_1054](#), [r_1081](#), [r_1217](#), [r_1318](#), [r_1376](#), [r_1425](#) and as a modifier in [r_0245](#), [r_0370](#), [r_0675](#), [r_0765](#), [r_0806](#), [r_0808](#), [r_0815](#), [r_0854](#), [r_1054](#), [r_1081](#), [r_1217](#), [r_1318](#), [r_1376](#), [r_1425](#)).

$$\begin{aligned} \frac{d}{dt}s_{0233} = & v_{80} + v_{110} + v_{199} + v_{217} + v_{218} + v_{221} + v_{226} \\ & + v_{253} + v_{263} + v_{291} + v_{324} + v_{344} + v_{363} - v_{170} \end{aligned} \quad (865)$$

8.53 Species s_0237

Name 2-phospho-4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol

SBO:0000247 simple chemical

Notes iJO1366:M_2p4c2me_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0053](#) and as a product in [r_0178](#) and as a modifier in [r_0053](#), [r_0178](#)).

$$\frac{d}{dt}s_{0237} = v_{56} - v_{10} \quad (866)$$

8.54 Species s_0252

Name 3'-Phosphoadenylyl sulfate

SBO:0000247 simple chemical

Notes iJO1366:M_paps_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1139](#) and as a product in [r_0305](#) and as a modifier in [r_0305](#), [r_1139](#)).

$$\frac{d}{dt}s_{0252} = v_{99} - v_{270} \quad (867)$$

8.55 Species s_0255

Name 3,4-dihydroxy-2-butanone 4-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_db4p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1265](#) and as a product in [r_0092](#) and as a modifier in [r_0092](#), [r_1265](#)).

$$\frac{d}{dt}s_{0255} = v_{19} - v_{307} \quad (868)$$

8.56 Species s_0262

Name 3-(4-Hydroxyphenyl)pyruvate

SBO:0000247 simple chemical

Notes iJO1366:M_34hpp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1376](#) and as a product in [r_1225](#) and as a modifier in [r_1225](#), [r_1376](#)).

$$\frac{d}{dt}s_{0262} = v_{297} - v_{344} \quad (869)$$

8.57 Species s_0263

Name 3-(Imidazol-4-yl)-2-oxopropyl phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_imacp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0765](#) and as a product in [r_0785](#) and as a modifier in [r_0765](#), [r_0785](#)).

$$\frac{d}{dt}s_{0263} = v_{206} - v_{199} \quad (870)$$

8.58 Species s_0265

Name 3-Carboxy-2-hydroxy-4-methylpentanoate

SBO:0000247 simple chemical

Notes iJO1366:M_3c2hmp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0139](#) and as a product in [r_0138](#) and as a modifier in [r_0138](#), [r_0139](#)).

$$\frac{d}{dt}s_{0265} = v_{43} - v_{44} \quad (871)$$

8.59 Species s_0266

Name 3-Carboxy-3-hydroxy-4-methylpentanoate

SBO:0000247 simple chemical

Notes iJO1366:M_3c3hmp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0066](#) and as a product in [r_0067](#) and as a modifier in [r_0066](#), [r_0067](#)).

$$\frac{d}{dt}s_{0266} = v_{15} - v_{14} \quad (872)$$

8.60 Species s_0267

Name 3-Carboxy-4-methyl-2-oxopentanoate

SBO:0000247 simple chemical

Notes iJO1366:M_3c4mop_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0078](#) and as a product in [r_0139](#) and as a modifier in [r_0078](#), [r_0139](#)).

$$\frac{d}{dt}s_{0267} = v_{44} - v_{16} \quad (873)$$

8.61 Species s_0269

Name 3-Dehydroquinate

SBO:0000247 simple chemical

Notes iJO1366:M_3dhq_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0098](#) and as a product in [r_0099](#) and as a modifier in [r_0098](#), [r_0099](#)).

$$\frac{d}{dt}s_{0269} = v_{22} - v_{21} \quad (874)$$

8.62 Species s_0270

Name 3-Dehydroshikimate

SBO:0000247 simple chemical

Notes iJO1366:M_3dhsk_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1304](#) and as a product in [r_0098](#) and as a modifier in [r_0098](#), [r_1304](#)).

$$\frac{d}{dt}s_{0270} = v_{21} - v_{318} \quad (875)$$

8.63 Species s_0271

Name 3-Deoxy-D-manno-2-octulosonate

SBO:0000247 simple chemical

Notes iJO1366:M_kdo_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0105](#) and as a product in [r_0106](#) and as a modifier in [r_0105](#), [r_0106](#)).

$$\frac{d}{dt}s_{0271} = v_{28} - v_{27} \quad (876)$$

8.64 Species s_0272

Name 3-Deoxy-D-manno-octulosonate 8-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_kdo8p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0106](#) and as a product in [r_0100](#) and as a modifier in [r_0100](#), [r_0106](#)).

$$\frac{d}{dt}s_{0272} = v_{23} - v_{28} \quad (877)$$

8.65 Species s_0276

Name 3-Hydroxyglutaryl-[acyl-carrier protein] methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_hgmeACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0145](#) and as a product in [r_0146](#) and as a modifier in [r_0145](#), [r_0146](#)).

$$\frac{d}{dt}s_{0276} = v_{47} - v_{46} \quad (878)$$

8.66 Species s_0277

Name 3-Hydroxypimeloyl-[acyl-carrier protein] methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_hpmeACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0148](#) and as a product in [r_0149](#) and as a modifier in [r_0148](#), [r_0149](#)).

$$\frac{d}{dt}s_{0277} = v_{50} - v_{49} \quad (879)$$

8.67 Species s_0282

Name 3-Methyl-2-oxobutanoate

SBO:0000247 simple chemical

Notes iJO1366:M_3mob_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in eight reactions (as a reactant in [r_0067](#), [r_0143](#), [r_1425](#) and as a product in [r_0517](#) and as a modifier in [r_0067](#), [r_0143](#), [r_0517](#), [r_1425](#)).

$$\frac{d}{dt}s_{0282} = v_{146} - v_{15} - v_{45} - v_{363} \quad (880)$$

8.68 Species s_0283

Name 3-Octaprenyl-4-hydroxybenzoate

SBO:0000247 simple chemical

Notes iJO1366:M_3ophb_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1064](#) and as a product in [r_0775](#) and as a modifier in [r_0775](#), [r_1064](#)).

$$\frac{d}{dt}s_{0283} = v_{203} - v_{256} \quad (881)$$

8.69 Species s_0289

Name 3-Oxo-glutaryl-[acyl-carrier protein] methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_ogmeACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0146](#) and as a product in [r_0147](#) and as a modifier in [r_0146](#), [r_0147](#)).

$$\frac{d}{dt}s_{0289} = v_{48} - v_{47} \quad (882)$$

8.70 Species s_0290

Name 3-Oxo-pimeloyl-[acyl-carrier protein] methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_opmeACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0149](#) and as a product in [r_0150](#) and as a modifier in [r_0149](#), [r_0150](#)).

$$\frac{d}{dt}s_{0290} = v_{51} - v_{50} \quad (883)$$

8.71 Species s_0293

Name 3-Oxodecanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3odcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0128](#) and as a product in [r_0235](#) and as a modifier in [r_0128](#), [r_0235](#)).

$$\frac{d}{dt}s_{0293} = v_{75} - v_{36} \quad (884)$$

8.72 Species s_0295

Name 3-Oxododecanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3oddcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0129](#) and as a product in [r_0232](#) and as a modifier in [r_0129](#), [r_0232](#)).

$$\frac{d}{dt}s_{0295} = v_{72} - v_{37} \quad (885)$$

8.73 Species s_0297

Name 3-Oxohexadecanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3ohdcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0130](#) and as a product in [r_0236](#) and as a modifier in [r_0130](#), [r_0236](#)).

$$\frac{d}{dt}s_{0297} = v_{76} - v_{38} \quad (886)$$

8.74 Species s_0299

Name 3-Oxohexanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3ohcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0131](#) and as a product in [r_0231](#) and as a modifier in [r_0131](#), [r_0231](#)).

$$\frac{d}{dt}s_{0299} = v_{71} - v_{39} \quad (887)$$

8.75 Species s_0303

Name 3-Oxoctanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3oocoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0133](#) and as a product in [r_0234](#) and as a modifier in [r_0133](#), [r_0234](#)).

$$\frac{d}{dt}s_{0303} = v_{74} - v_{40} \quad (888)$$

8.76 Species s_0304

Name 3-Oxotetradecanoyl-[acyl-carrier protein]

SBO:0000247 simple chemical

Notes iJO1366:M_3omrsACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0154](#) and as a product in [r_0166](#) and as a modifier in [r_0154](#), [r_0166](#)).

$$\frac{d}{dt}s_{0304} = v_{53} - v_{52} \quad (889)$$

8.77 Species s_0305

Name 3-Oxotetradecanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_3otdcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0134](#) and as a product in [r_0233](#) and as a modifier in [r_0134](#), [r_0233](#)).

$$\frac{d}{dt}s_{0305} = v_{73} - v_{41} \quad (890)$$

8.78 Species s_0306

Name 3-Phospho-D-glycerate

SBO:0000247 simple chemical

Notes iJO1366:M_3pg_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_1151](#), [r_1153](#) and as a product in [r_1152](#) and as a modifier in [r_1151](#), [r_1152](#), [r_1153](#)).

$$\frac{d}{dt}s_{0306} = v_{274} - v_{273} - v_{275} \quad (891)$$

8.79 Species s_0307

Name 3-Phospho-D-glyceroyl phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_13dpg_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1152](#) and as a product in [r_0695](#) and as a modifier in [r_0695](#), [r_1152](#)).

$$\frac{d}{dt}s_{0307} = v_{179} - v_{274} \quad (892)$$

8.80 Species s_0308

Name 3-Phosphohydroxypyruvate

SBO:0000247 simple chemical

Notes iJO1366:M_3php_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1217](#) and as a product in [r_1151](#) and as a modifier in [r_1151](#), [r_1217](#)).

$$\frac{d}{dt}s_{0308} = v_{273} - v_{291} \quad (893)$$

8.81 Species s_0310

Name 4,5-dihydroxy-2,3-pentanedione

SBO:0000247 simple chemical

Notes iJO1366:M_dhptd_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0176](#) and as a product in [r_1291](#) and as a modifier in [r_0176](#), [r_1291](#)).

$$\frac{d}{dt}s_{0310} = v_{316} - v_{55} \quad (894)$$

8.82 Species s_0311

Name 4-(1-D-Ribitylamino)-5-aminouracil

SBO:0000247 simple chemical

Notes iJO1366:M_4r5au_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1265](#) and as a product in [r_1266](#), [r_2521](#) and as a modifier in [r_1265](#), [r_1266](#), [r_2521](#)).

$$\frac{d}{dt}s_{0311} = v_{308} + v_{394} - v_{307} \quad (895)$$

8.83 Species s_0312

Name 4-(cytidine 5'-diphospho)-2-C-methyl-D-erythritol

SBO:0000247 simple chemical

Notes iJO1366:M_4c2me_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0178](#) and as a product in [r_0054](#) and as a modifier in [r_0054](#), [r_0178](#)).

$$\frac{d}{dt}s_{0312} = v_{11} - v_{56} \quad (896)$$

8.84 Species s_0313

Name 4-Amino-2-methyl-5-phosphomethylpyrimidine

SBO:0000247 simple chemical

Notes iJO1366:M_4ampm_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1198](#) and as a product in [r_0179](#) and as a modifier in [r_0179](#), [r_1198](#)).

$$\frac{d}{dt}s_{0313} = v_{57} - v_{276} \quad (897)$$

8.85 Species s_0316

Name 4-amino-4-deoxychorismate

SBO:0000247 simple chemical

Notes iJO1366:M_4adcho_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0182](#) and as a product in [r_0181](#) and as a modifier in [r_0181](#), [r_0182](#)).

$$\frac{d}{dt}s_{0316} = v_{58} - v_{59} \quad (898)$$

8.86 Species s_0318

Name 4-Aminobenzoate

SBO:0000247 simple chemical

Notes iJO1366:M_4abz_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0515](#) and as a product in [r_0182](#) and as a modifier in [r_0182](#), [r_0515](#)).

$$\frac{d}{dt}s_{0318} = v_{59} - v_{145} \quad (899)$$

8.87 Species s_0325

Name 4-Hydroxybenzoate

SBO:0000247 simple chemical

Notes iJO1366:M_4hbz_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0775](#) and as a product in [r_0424](#) and as a modifier in [r_0424](#), [r_0775](#)).

$$\frac{d}{dt}s_{0325} = v_{121} - v_{203} \quad (900)$$

8.88 Species s_0328

Name 4-Methyl-2-oxopentanoate

SBO:0000247 simple chemical

Notes iJO1366:M_4mop_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0854](#) and as a product in [r_0078](#) and as a modifier in [r_0078](#), [r_0854](#)).

$$\frac{d}{dt}s_{0328} = v_{16} - v_{226} \quad (901)$$

8.89 Species s_0330

Name 4-Methyl-5-(2-phosphoethyl)-thiazole

SBO:0000247 simple chemical

Notes iJO1366:M_4mpetz_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1344](#) and as a product in [r_1346](#) and as a modifier in [r_1344](#), [r_1346](#)).

$$\frac{d}{dt}s_{0330} = v_{332} - v_{330} \quad (902)$$

8.90 Species s_0331

Name 4-Phospho-D-erythronate

SBO:0000247 simple chemical

Notes iJO1366:M_4per_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0573](#) and as a product in [r_0574](#) and as a modifier in [r_0573](#), [r_0574](#)).

$$\frac{d}{dt}s_{0331} = v_{155} - v_{154} \quad (903)$$

8.91 Species s_0332

Name 4-Phospho-L-aspartate

SBO:0000247 simple chemical

Notes iJO1366:M_4pasp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0371](#) and as a product in [r_0369](#) and as a modifier in [r_0369](#), [r_0371](#)).

$$\frac{d}{dt}s_{0332} = v_{109} - v_{111} \quad (904)$$

8.92 Species s_0333

Name 5'-Deoxyadenosine

SBO:0000247 simple chemical

Notes iJO1366:M_dad_DASH_5_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0186](#) and as a product in [r_0383](#), [r_1375](#) and as a modifier in [r_0186](#), [r_0383](#), [r_1375](#)).

$$\frac{d}{dt}s_{0333} = v_{113} + v_{343} - v_{60} \quad (905)$$

8.93 Species s_0334

Name 5'-deoxyribose

SBO:0000247 simple chemical

Notes iJO1366:M_5drib_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2534](#) and as a product in [r_0186](#) and as a modifier in [r_0186](#), [r_2534](#)).

$$\frac{d}{dt}s_{0334} = v_{60} - v_{396} \quad (906)$$

8.94 Species s_0335

Name 5,10-Methenyltetrahydrofolate

SBO:0000247 simple chemical

Notes iJO1366:M_methf_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0950](#) and as a product in [r_0957](#) and as a modifier in [r_0950](#), [r_0957](#)).

$$\frac{d}{dt}s_{0335} = v_{235} - v_{232} \quad (907)$$

8.95 Species s_0336

Name 5,10-Methylenetetrahydrofolate

SBO:0000247 simple chemical

Notes iJO1366:M_mlthf_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in twelve reactions (as a reactant in [r_0143](#), [r_0211](#), [r_0957](#), [r_1353](#), [r_2584](#) and as a product in [r_0726](#) and as a modifier in [r_0143](#), [r_0211](#), [r_0726](#), [r_0957](#), [r_1353](#), [r_2584](#)).

$$\frac{d}{dt}s_{0336} = v_{185} - v_{45} - v_{61} - v_{235} - v_{336} - 2.23 \cdot 10^{-4}v_{399} \quad (908)$$

8.96 Species s_0337

Name 5,6,7,8-Tetrahydrofolate

SBO:0000247 simple chemical

Notes iJO1366:M_thf_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in 14 reactions (as a reactant in [r_0622](#), [r_0726](#), [r_2584](#) and as a product in [r_0143](#), [r_0504](#), [r_0954](#), [r_1209](#) and as a modifier in [r_0143](#), [r_0504](#), [r_0622](#), [r_0726](#), [r_0954](#), [r_1209](#), [r_2584](#)).

$$\frac{d}{dt}s_{0337} = v_{45} + v_{139} + v_{234} + v_{285} - v_{162} - v_{185} - 2.23 \cdot 10^{-4}v_{399} \quad (909)$$

8.97 Species s_0341

Name 5-[(5-phospho-1-deoxyribulos-1-ylamino)methylideneamino]-1-(5-phosphoribosyl)imidazole-4-carboxamide

SBO:0000247 simple chemical

Notes iJO1366:M_prlp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0784](#) and as a product in [r_0008](#) and as a modifier in [r_0008](#), [r_0784](#)).

$$\frac{d}{dt}s_{0341} = v_2 - v_{205} \quad (910)$$

8.98 Species s_0342

Name 5-amino-1-(5-phospho-D-ribosyl)imidazole

SBO:0000247 simple chemical

Notes iJO1366:M_air_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0179](#), [r_1206](#) and as a product in [r_1208](#) and as a modifier in [r_0179](#), [r_1206](#), [r_1208](#)).

$$\frac{d}{dt}s_{0342} = v_{284} - v_{57} - v_{282} \quad (911)$$

8.99 Species s_0343

Name 5-Amino-1-(5-Phospho-D-ribosyl)imidazole-4-carboxamide

SBO:0000247 simple chemical

Notes iJO1366:M_aicar_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_1209](#) and as a product in [r_0302](#), [r_0784](#) and as a modifier in [r_0302](#), [r_0784](#), [r_1209](#)).

$$\frac{d}{dt}s_{0343} = v_{96} + v_{205} - v_{285} \quad (912)$$

8.100 Species s_0344

Name 5-amino-1-(5-phospho-D-ribosyl)imidazole-4-carboxylate

SBO:0000247 simple chemical

Notes iJO1366:M_5aizc_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1210](#) and as a product in [r_1207](#) and as a modifier in [r_1207](#), [r_1210](#)).

$$\frac{d}{dt}s_{0344} = v_{283} - v_{286} \quad (913)$$

8.101 Species s_0345

Name 5-Amino-4-oxopentanoate

SBO:0000247 simple chemical

Notes iJO1366:M_5aop_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1223](#) and as a product in [r_0678](#) and as a modifier in [r_0678](#), [r_1223](#)).

$$\frac{d}{dt}s_{0345} = v_{172} - 2v_{295} \quad (914)$$

8.102 Species s_0346

Name 5-Amino-6-(5'-phosphoribitylamino)uracil

SBO:0000247 simple chemical

Notes iJO1366:M_5aprbu_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2521](#) and as a product in [r_0212](#) and as a modifier in [r_0212](#), [r_2521](#)).

$$\frac{d}{dt}s_{0346} = v_{62} - v_{394} \quad (915)$$

8.103 Species s_0347

Name 5-Amino-6-(5'-phosphoribosylamino)uracil

SBO:0000247 simple chemical

Notes iJO1366:M_5apru_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0212](#) and as a product in [r_0498](#) and as a modifier in [r_0212](#), [r_0498](#)).

$$\frac{d}{dt}s_{0347} = v_{133} - v_{62} \quad (916)$$

8.104 Species s_0352

Name 5-Formamido-1-(5-phospho-D-ribosyl)imidazole-4-carboxamide

SBO:0000247 simple chemical

Notes iJO1366:M_fprrca_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0786](#) and as a product in [r_1209](#) and as a modifier in [r_0786](#), [r_1209](#)).

$$\frac{d}{dt}s_{0352} = v_{285} - v_{207} \quad (917)$$

8.105 Species s_0354

Name 5-Methyltetrahydrofolate

SBO:0000247 simple chemical

Notes iJO1366:M_5mthf_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0954](#) and as a product in [r_0211](#) and as a modifier in [r_0211](#), [r_0954](#)).

$$\frac{d}{dt}s_{0354} = v_{61} - v_{234} \quad (918)$$

8.106 Species s_0359

Name 5-O-(1-Carboxyvinyl)-3-phosphoshikimate

SBO:0000247 simple chemical

Notes iJO1366:M_3psme_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0425](#) and as a product in [r_0175](#) and as a modifier in [r_0175](#), [r_0425](#)).

$$\frac{d}{dt}s_{0359} = v_{54} - v_{122} \quad (919)$$

8.107 Species s_0360

Name 5-Phospho-alpha-D-ribose 1-diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_prpp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in [r_0348](#), [r_0374](#), [r_0682](#), [r_1021](#), [r_1067](#) and as a product in [r_1215](#) and as a modifier in [r_0348](#), [r_0374](#), [r_0682](#), [r_1021](#), [r_1067](#), [r_1215](#)).

$$\frac{d}{dt}s_{0360} = v_{290} - v_{101} - v_{112} - v_{174} - v_{247} - v_{258} \quad (920)$$

8.108 Species s_0361

Name 5-Phospho-beta-D-ribosylamine

SBO:0000247 simple chemical

Notes iJO1366:M_pram_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1214](#) and as a product in [r_0682](#) and as a modifier in [r_0682](#), [r_1214](#)).

$$\frac{d}{dt}s_{0361} = v_{174} - v_{289} \quad (921)$$

8.109 Species s_0362

Name 5-phosphoribosyl-5-carboxyaminoimidazole

SBO:0000247 simple chemical

Notes iJO1366:M_5caiz_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1207](#) and as a product in [r_1206](#) and as a modifier in [r_1206](#), [r_1207](#)).

$$\frac{d}{dt}s_{0362} = v_{282} - v_{283} \quad (922)$$

8.110 Species s_0364

Name 6,7-Dimethyl-8-(1-D-ribityl)lumazine

SBO:0000247 simple chemical

Notes iJO1366:M_dmlz_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1266](#) and as a product in [r_1265](#) and as a modifier in [r_1265](#), [r_1266](#)).

$$\frac{d}{dt}s_{0364} = v_{307} - 2v_{308} \quad (923)$$

8.111 Species s_0367

Name 6-hydroxymethyl dihydropterin

SBO:0000247 simple chemical

Notes iJO1366:M_6hmhpt_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0216](#) and as a product in [r_0507](#) and as a modifier in [r_0216](#), [r_0507](#)).

$$\frac{d}{dt}s_{0367} = v_{141} - v_{63} \quad (924)$$

8.112 Species s_0368

Name 6-hydroxymethyl-dihydropterin pyrophosphate

SBO:0000247 simple chemical

Notes iJO1366:M_6hmhptpp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0515](#) and as a product in [r_0216](#) and as a modifier in [r_0216](#), [r_0515](#)).

$$\frac{d}{dt}s_{0368} = v_{63} - v_{145} \quad (925)$$

8.113 Species s_0369

Name 6-Phospho-D-gluconate

SBO:0000247 simple chemical

Notes iJO1366:M_6pgc_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0217](#) and as a product in [r_0218](#) and as a modifier in [r_0217](#), [r_0218](#)).

$$\frac{d}{dt}s_{0369} = v_{65} - v_{64} \quad (926)$$

8.114 Species s_0370

Name 6-phospho-D-glucono-1,5-lactone

SBO:0000247 simple chemical

Notes iJO1366:M_6pgl_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0218](#) and as a product in [r_0660](#) and as a modifier in [r_0218](#), [r_0660](#)).

$$\frac{d}{dt}s_{0370} = v_{167} - v_{65} \quad (927)$$

8.115 Species s_0371

Name 7,8-Diaminononanoate

SBO:0000247 simple chemical

Notes iJO1366:M_dann_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0489](#) and as a product in [r_0297](#) and as a modifier in [r_0297](#), [r_0489](#)).

$$\frac{d}{dt}s_{0371} = v_{94} - v_{132} \quad (928)$$

8.116 Species s_0372

Name 7,8-Dihydrofolate

SBO:0000247 simple chemical

Notes iJO1366:M_dhf_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0504](#) and as a product in [r_0505](#), [r_1353](#) and as a modifier in [r_0504](#), [r_0505](#), [r_1353](#)).

$$\frac{d}{dt}s_{0372} = v_{140} + v_{336} - v_{139} \quad (929)$$

8.117 Species s_0376

Name 8-Amino-7-oxononanoate

SBO:0000247 simple chemical

Notes iJO1366:M_8aonn_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0297](#) and as a product in [r_0222](#) and as a modifier in [r_0222](#), [r_0297](#)).

$$\frac{d}{dt}s_{0376} = v_{66} - v_{94} \quad (930)$$

8.118 Species s_0377

Name [2Fe-1S] desulfurated iron-sulfur cluster

SBO:0000247 simple chemical

Notes iJO1366:M_2fe1s_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0796](#) and as a product in [r_0383](#) and as a modifier in [r_0383](#), [r_0796](#)).

$$\frac{d}{dt}s_{0377} = v_{113} - v_{210} \quad (931)$$

8.119 Species s_0378

Name [2Fe-2S] iron-sulfur cluster

SBO:0000247 simple chemical

Notes iJO1366:M_2fe2s_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0383](#), [r_2584](#) and as a product in [r_0799](#) and as a modifier in [r_0383](#), [r_0799](#), [r_2584](#)).

$$\frac{d}{dt}s_{0378} = v_{213} - v_{113} - 2.6 \cdot 10^{-5}v_{399} \quad (932)$$

8.120 Species s_0380

Name [4Fe-4S] iron-sulfur cluster

SBO:0000247 simple chemical

Notes iJO1366:M_4fe4s_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0801](#) and as a modifier in [r_0801](#), [r_2584](#)).

$$\frac{d}{dt}s_{0380} = v_{215} - 2.6 \cdot 10^{-4}v_{399} \quad (933)$$

8.121 Species s_0381

Name Acetaldehyde

SBO:0000247 simple chemical

Notes iJO1366:M_acald_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0224](#) and as a product in [r_1348](#) and as a modifier in [r_0224](#), [r_1348](#)).

$$\frac{d}{dt}s_{0381} = v_{334} - v_{67} \quad (934)$$

8.122 Species s_0384

Name Acetate

SBO:0000247 simple chemical

Notes iJO1366:M_ac_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_0225](#) and as a product in [r_0244](#), [r_0452](#), [r_1379](#) and as a modifier in [r_0225](#), [r_0244](#), [r_0452](#), [r_1379](#)).

$$\frac{d}{dt}s_{0384} = v_{79} + v_{128} + v_{346} - v_{68} \quad (935)$$

8.123 Species s_0391

Name Acetoacetyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_aacoa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0135](#) and as a product in [r_0230](#) and as a modifier in [r_0135](#), [r_0230](#)).

$$\frac{d}{dt}s_{0391} = v_{70} - v_{42} \quad (936)$$

8.124 Species s_0393

Name Acetyl phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_actp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1218](#) and as a product in [r_0225](#) and as a modifier in [r_0225](#), [r_1218](#)).

$$\frac{d}{dt}s_{0393} = v_{68} - v_{292} \quad (937)$$

8.125 Species s_0395

Name Acetyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_accoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in 38 reactions (as a reactant in r_0067, r_0230, r_0231, r_0232, r_0233, r_0234, r_0235, r_0236, r_0237, r_0428, r_0658, r_0999, r_1301 and as a product in r_0224, r_0724, r_1218, r_1251, r_1252, r_1255 and as a modifier in r_0067, r_0224, r_0230, r_0231, r_0232, r_0233, r_0234, r_0235, r_0236, r_0237, r_0428, r_0658, r_0724, r_0999, r_1218, r_1251, r_1252, r_1255, r_1301).

$$\frac{d}{dt}s_{0395} = v_{67} + v_{184} + v_{292} + v_{302} + v_{303} + v_{304} - v_{15} - 2v_{70} - v_{71} - v_{72} - v_{73} - v_{74} - v_{75} - v_{76} - v_{77} - v_{123} - v_{166} - v_{243} - v_{317} \quad (938)$$

8.126 Species s_0397

Name acyl carrier protein

SBO:0000247 simple chemical

Notes iJO1366:M_ACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in 26 reactions (as a reactant in r_0257, r_0259, r_0260, r_0935 and as a product in r_0012, r_0013, r_0150, r_0166, r_0222, r_0706, r_0707, r_1378, r_1391 and as a modifier in r_0012, r_0013, r_0150, r_0166, r_0222, r_0257, r_0259, r_0260, r_0706, r_0707, r_0935, r_1378, r_1391).

$$\frac{d}{dt}s_{0397} = v_5 + v_6 + v_{51} + v_{53} + v_{66} + v_{181} + v_{182} + v_{345} + v_{349} - v_{83} - v_{84} - v_{85} - v_{231} \quad (939)$$

8.127 Species s_0405

Name Adenine

SBO:0000247 simple chemical

Notes iJO1366:M_ade_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in r_1232 and as a product in r_0186, r_1288 and as a modifier in r_0186, r_1232, r_1288).

$$\frac{d}{dt}s_{0405} = v_{60} + v_{315} - v_{299} \quad (940)$$

8.128 Species s_0408

Name Adenosine

SBO:0000247 simple chemical

Notes iJO1366:M_adn_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0292](#) and as a product in [r_1232](#) and as a modifier in [r_0292](#), [r_1232](#)).

$$\frac{d}{dt}s_{0408} = v_{299} - v_{93} \quad (941)$$

8.129 Species s_0411

Name Adenosine 3',5'-bisphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_pap_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0085](#) and as a product in [r_1139](#) and as a modifier in [r_0085](#), [r_1139](#)).

$$\frac{d}{dt}s_{0411} = v_{270} - v_{18} \quad (942)$$

8.130 Species s_0412

Name Adenosine 5'-phosphosulfate

SBO:0000247 simple chemical

Notes iJO1366:M_aps_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0305](#) and as a product in [r_1329](#) and as a modifier in [r_0305](#), [r_1329](#)).

$$\frac{d}{dt}s_{0412} = v_{325} - v_{99} \quad (943)$$

8.131 Species s_0420

Name adenylated molybdopterin

SBO:0000247 simple chemical

Notes iJO1366:M_mptamp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in r_0384, r_0964 and as a product in r_0965 and as a modifier in r_0384, r_0964, r_0965).

$$\frac{d}{dt}s_{0420} = v_{238} - v_{114} - v_{237} \quad (944)$$

8.132 Species s_0421

Name ADP

SBO:0000247 simple chemical

Notes iJO1366:M_adp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in 105 reactions (as a reactant in r_1152, r_1222, r_1521 and as a product in r_0178, r_0225, r_0237, r_0243, r_0292, r_0301, r_0305, r_0369, r_0388, r_0440, r_0457, r_0463, r_0488, r_0489, r_0505, r_0532, r_0622, r_0648, r_0673, r_0683, r_0697, r_0754, r_0761, r_0762, r_0770, r_1006, r_1039, r_1043, r_1045, r_1046, r_1047, r_1075, r_1198, r_1206, r_1208, r_1210, r_1212, r_1214, r_1264, r_1305, r_1315, r_1337, r_1345, r_1397, r_1399, r_1400, r_1401, r_1409, r_2195, r_2584 and as a modifier in r_0178, r_0225, r_0237, r_0243, r_0292, r_0301, r_0305, r_0369, r_0388, r_0440, r_0457, r_0463, r_0488, r_0489, r_0505, r_0532, r_0622, r_0648, r_0673, r_0683, r_0697, r_0754, r_0761, r_0762, r_0770, r_1006, r_1039, r_1043, r_1045, r_1046, r_1047, r_1075, r_1152, r_1198, r_1206, r_1208, r_1210, r_1212, r_1214, r_1222, r_1264, r_1305, r_1315, r_1337, r_1345, r_1397, r_1399, r_1400, r_1401, r_1409, r_1521, r_2195).

$$\begin{aligned} \frac{d}{dt}s_{0421} = & v_{56} + v_{68} + v_{77} + v_{78} + v_{93} + 2v_{95} + v_{99} + v_{109} + v_{117} + v_{125} + v_{129} + v_{130} \\ & + v_{131} + v_{132} + v_{140} + v_{149} + v_{162} + v_{164} + v_{169} + v_{175} + v_{180} + v_{193} \\ & + v_{195} + v_{196} + v_{201} + v_{244} + v_{248} + v_{249} + v_{250} + v_{251} + v_{252} + v_{261} \\ & + v_{276} + v_{282} + v_{284} + v_{286} + v_{288} + v_{289} + v_{306} + v_{319} + v_{322} + v_{328} + v_{331} \\ & + v_{352} + v_{353} + v_{354} + v_{355} + v_{357} + 2v_{391} + 53.95v_{399} - v_{274} - v_{294} - v_{366} \end{aligned} \quad (945)$$

8.133 Species s_0435

Name all-trans-Octaprenyl diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_octdp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0775](#) and as a product in [r_1063](#) and as a modifier in [r_0775](#), [r_1063](#)).

$$\frac{d}{dt}s_{0435} = v_{255} - v_{203} \quad (946)$$

8.134 Species s_0445

Name alpha-D-Ribose 1-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_r1p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1232](#) and as a product in [r_1202](#) and as a modifier in [r_1202](#), [r_1232](#)).

$$\frac{d}{dt}s_{0445} = v_{279} - v_{299} \quad (947)$$

8.135 Species s_0446

Name alpha-D-Ribose 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_r5p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_1202](#), [r_1215](#) and as a product in [r_1284](#), [r_1357](#) and as a modifier in [r_1202](#), [r_1215](#), [r_1284](#), [r_1357](#)).

$$\frac{d}{dt}s_{0446} = v_{313} + v_{338} - v_{279} - v_{290} \quad (948)$$

8.136 Species s_0451

Name Ammonium

SBO:0000247 simple chemical

Notes iJO1366:M_nh4_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 24 reactions (as a reactant in [r_0365](#), [r_0388](#), [r_0675](#), [r_0683](#), [r_1008](#), [r_1368](#), [r_2584](#) and as a product in [r_0450](#), [r_0498](#), [r_0777](#), [r_0847](#), [r_1511](#) and as a modifier in [r_0365](#), [r_0388](#), [r_0450](#), [r_0498](#), [r_0675](#), [r_0683](#), [r_0777](#), [r_0847](#), [r_1008](#), [r_1368](#), [r_1511](#), [r_2584](#)).

$$\frac{d}{dt}s_{0451} = v_{127} + v_{133} + 4v_{204} + v_{224} + v_{365} - v_{106} - v_{117} - v_{170} - v_{175} - v_{245} - v_{342} - 0.01301v_{399} \quad (949)$$

8.137 Species s_0453

Name Ammonium

SBO:0000247 simple chemical

Notes iJO1366:M_nh4_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1511](#) and as a modifier in [r_1511](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{0453} = 0 \quad (950)$$

8.138 Species s_0454

Name AMP

SBO:0000247 simple chemical

Notes iJO1366:M_amp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 38 reactions (as a reactant in [r_0301](#) and as a product in [r_0085](#), [r_0216](#), [r_0257](#), [r_0259](#), [r_0260](#), [r_0292](#), [r_0304](#), [r_0361](#), [r_0365](#), [r_0384](#), [r_0687](#), [r_0741](#),

`r_0963, r_0964, r_1008, r_1076, r_1215, r_1346` and as a modifier in `r_0085, r_0216, r_0257, r_0259, r_0260, r_0292, r_0301, r_0304, r_0361, r_0365, r_0384, r_0687, r_0741, r_0963, r_0964, r_1008, r_1076, r_1215, r_1346`.

$$\frac{d}{dt}s_{0454} = v_{18} + v_{63} + v_{83} + v_{84} + v_{85} + v_{93} + v_{98} + v_{105} + v_{106} + v_{114} + v_{178} + v_{190} + v_{236} + v_{237} + v_{245} + v_{262} + v_{290} + v_{332} - v_{95} \quad (951)$$

8.139 Species s_0457

Name Anthranilate

SBO:0000247 simple chemical

Notes iJO1366:M_anth_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in `r_0348` and as a product in `r_0349` and as a modifier in `r_0348, r_0349`).

$$\frac{d}{dt}s_{0457} = v_{102} - v_{101} \quad (952)$$

8.140 Species s_0467

Name ATP

SBO:0000247 simple chemical

Notes iJO1366:M_atp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 148 reactions (as a reactant in `r_0178, r_0216, r_0225, r_0237, r_0243, r_0257, r_0259, r_0260, r_0292, r_0301, r_0305, r_0361, r_0365, r_0369, r_0374, r_0388, r_0440, r_0457, r_0463, r_0488, r_0489, r_0505, r_0532, r_0611, r_0622, r_0648, r_0673, r_0683, r_0687, r_0697, r_0741, r_0754, r_0761, r_0762, r_0770, r_0951, r_0965, r_0969, r_1006, r_1008, r_1019, r_1039, r_1043, r_1045, r_1046, r_1047, r_1074, r_1075, r_1076, r_1198, r_1206, r_1208, r_1210, r_1212, r_1214, r_1215, r_1264, r_1276, r_1305, r_1315, r_1329, r_1337, r_1345, r_1346, r_1397, r_1399, r_1400, r_1401, r_1409, r_2195, r_2584` and as a product in `r_1152, r_1222, r_1521` and as a modifier in `r_0178, r_0216, r_0225, r_0237, r_0243, r_0257, r_0259, r_0260, r_0292, r_0301, r_0305, r_0361, r_0365, r_0369, r_0374, r_0388, r_0440, r_0457, r_0463, r_0488, r_0489, r_0505, r_0532, r_0611, r_0622, r_0648, r_0673, r_0683, r_0687, r_0697, r_0741, r_0754, r_0761, r_0762, r_0770, r_0951, r_0965, r_0969, r_1006, r_1008, r_1019, r_1039, r_1043, r_1045, r_1046, r_1047, r_1074, r_1075, r_1076, r_1198, r_1206, r_1208, r_1210, r_1212, r_1214, r_1215`,

[r_1222](#), [r_1264](#), [r_1276](#), [r_1305](#), [r_1315](#), [r_1329](#), [r_1337](#), [r_1345](#), [r_1346](#), [r_1397](#), [r_1399](#), [r_1400](#), [r_1401](#), [r_1409](#), [r_1521](#), [r_2195](#), [r_2584](#)).

$$\frac{d}{dt} s_{0467} = v_{274} + v_{294} + v_{366} - v_{56} - v_{63} - v_{68} - v_{77} - v_{78} - v_{83} - v_{84} - v_{85} - v_{93} - v_{95} - v_{99} \\ - v_{105} - v_{106} - v_{109} - v_{112} - v_{117} - v_{125} - v_{129} - v_{130} - v_{131} - v_{132} - v_{140} - v_{149} \\ - v_{161} - v_{162} - v_{164} - v_{169} - v_{175} - v_{178} - v_{180} - v_{190} - v_{193} - v_{195} - v_{196} - v_{201} \\ - v_{233} - v_{238} - v_{240} - v_{244} - v_{245} - v_{246} - v_{248} - v_{249} - v_{250} - v_{251} - v_{252} - v_{260} \\ - v_{261} - v_{262} - v_{276} - v_{282} - v_{284} - v_{286} - v_{288} - v_{289} - v_{290} - v_{306} - v_{309} - v_{319} - v_{322} \\ - v_{325} - v_{328} - v_{331} - v_{332} - v_{352} - v_{353} - v_{354} - v_{355} - v_{357} - 2v_{391} - 54.12v_{399} \quad (953)$$

8.141 Species s_0470

Name beta-Alanine

SBO:0000247 simple chemical

Notes iJO1366:M_ala_DASH_B_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1076](#) and as a product in [r_0367](#) and as a modifier in [r_0367](#), [r_1076](#)).

$$\frac{d}{dt} s_{0470} = v_{107} - v_{262} \quad (954)$$

8.142 Species s_0474

Name Bicarbonate

SBO:0000247 simple chemical

Notes iJO1366:M_hco3_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0237](#), [r_1206](#) and as a product in [r_0755](#) and as a modifier in [r_0237](#), [r_0755](#), [r_1206](#)).

$$\frac{d}{dt} s_{0474} = v_{194} - v_{77} - v_{282} \quad (955)$$

8.143 Species s_0476

Name Biotin

SBO:0000247 simple chemical

Notes iJO1366:M_btn_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0383](#) and as a modifier in [r_0383](#), [r_2584](#)).

$$\frac{d}{dt}s_{0476} = v_{113} - 2 \cdot 10^{-6}v_{399} \quad (956)$$

8.144 Species s_0479

Name bis-molybdenum cofactor

SBO:0000247 simple chemical

Notes iJO1366:M_bmoco_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0386](#) and as a product in [r_0384](#) and as a modifier in [r_0384](#), [r_0386](#)).

$$\frac{d}{dt}s_{0479} = v_{114} - v_{116} \quad (957)$$

8.145 Species s_0480

Name bis-molybdopterin guanine dinucleotide

SBO:0000247 simple chemical

Notes iJO1366:M_bmocogdp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0385](#) and as a modifier in [r_0385](#), [r_2584](#)).

$$\frac{d}{dt}s_{0480} = v_{115} - 1.22 \cdot 10^{-4}v_{399} \quad (958)$$

8.146 Species s_0481

Name bis-molybdopterin mono-guanine dinucleotide

SBO:0000247 simple chemical

Notes iJO1366:M_bmoco1gdp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0385](#) and as a product in [r_0386](#) and as a modifier in [r_0385](#), [r_0386](#)).

$$\frac{d}{dt}s_{0481} = v_{116} - v_{115} \quad (959)$$

8.147 Species s_0488

Name Butanoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_btcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0231](#) and as a product in [r_0266](#) and as a modifier in [r_0231](#), [r_0266](#)).

$$\frac{d}{dt}s_{0488} = v_{86} - v_{71} \quad (960)$$

8.148 Species s_0493

Name C’-(3-Indolyl)-glycerol 3-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_3ig3p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1367](#) and as a product in [r_0788](#) and as a modifier in [r_0788](#), [r_1367](#)).

$$\frac{d}{dt}s_{0493} = v_{209} - v_{341} \quad (961)$$

8.149 Species s_0497

Name Calcium

SBO:0000247 simple chemical

Notes iJO1366:M_ca2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1536](#) and as a modifier in [r_1536](#), [r_2584](#)).

$$\frac{d}{dt}s_{0497} = v_{367} - 0.005205v_{399} \quad (962)$$

8.150 Species s_0499

Name Calcium

SBO:0000247 simple chemical

Notes iJO1366:M_ca2_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1536](#) and as a modifier in [r_1536](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{0499} = 0 \quad (963)$$

8.151 Species s_0502

Name Carbamoyl phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_cbp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0368](#), [r_1065](#) and as a product in [r_0388](#) and as a modifier in [r_0368](#), [r_0388](#), [r_1065](#)).

$$\frac{d}{dt}s_{0502} = v_{117} - v_{108} - v_{257} \quad (964)$$

8.152 Species s_0510

Name CDP

SBO:0000247 simple chemical

Notes iJO1366:M_cdp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1039](#) and as a product in [r_0457](#) and as a modifier in [r_0457](#), [r_1039](#)).

$$\frac{d}{dt}s_{0510} = v_{129} - v_{248} \quad (965)$$

8.153 Species s_0512

Name CDP-1,2-dihexadec-9-enoylglycerol

SBO:0000247 simple chemical

Notes iJO1366:M_cdpdhdec9eg_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1131](#) and as a product in [r_0419](#) and as a modifier in [r_0419](#), [r_1131](#)).

$$\frac{d}{dt}s_{0512} = v_{119} - v_{267} \quad (966)$$

8.154 Species s_0513

Name CDP-1,2-dihexadecanoylglycerol

SBO:0000247 simple chemical

Notes iJO1366:M_cdpdhdecg_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1130](#) and as a product in [r_0418](#) and as a modifier in [r_0418](#), [r_1130](#)).

$$\frac{d}{dt}s_{0513} = v_{118} - v_{266} \quad (967)$$

8.155 Species s_0520

Name Chloride

SBO:0000247 simple chemical

Notes iJO1366:M_cl_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1543](#) and as a modifier in [r_1543](#), [r_2584](#)).

$$\frac{d}{dt}s_{0520} = v_{368} - 0.005205v_{399} \quad (968)$$

8.156 Species s_0522

Name Chloride

SBO:0000247 simple chemical

Notes iJO1366:M_cl_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1543](#) and as a modifier in [r_1543](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{0522} = 0 \quad (969)$$

8.157 Species s_0526

Name chorismate

SBO:0000247 simple chemical

Notes iJO1366:M_chor_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [r_0181](#), [r_0349](#), [r_0423](#), [r_0424](#) and as a product in [r_0425](#) and as a modifier in [r_0181](#), [r_0349](#), [r_0423](#), [r_0424](#), [r_0425](#)).

$$\frac{d}{dt}s_{0526} = v_{122} - v_{58} - v_{102} - v_{120} - v_{121} \quad (970)$$

8.158 Species s_0530

Name cis-Aconitate

SBO:0000247 simple chemical

Notes iJO1366:M_acon_DASH_C_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0247](#) and as a product in [r_0246](#) and as a modifier in [r_0246](#), [r_0247](#)).

$$\frac{d}{dt}s_{0530} = v_{81} - v_{82} \quad (971)$$

8.159 Species s_0533

Name cis-hexadec-9-enoyl-[acyl-carrier protein] (n-C16:1)

SBO:0000247 simple chemical

Notes iJO1366:M_hdeACP_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0012](#), [r_0707](#) and as a product in [r_0260](#) and as a modifier in [r_0012](#), [r_0260](#), [r_0707](#)).

$$\frac{d}{dt}s_{0533} = v_{85} - v_5 - v_{182} \quad (972)$$

8.160 Species s_0536

Name Citrate

SBO:0000247 simple chemical

Notes iJO1366:M_cit_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0246](#) and as a product in [r_0428](#) and as a modifier in [r_0246](#), [r_0428](#)).

$$\frac{d}{dt}s_{0536} = v_{123} - v_{81} \quad (973)$$

8.161 Species s_0539

Name CMP

SBO:0000247 simple chemical

Notes iJO1366:M_cmp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in r_{0457} and as a product in $r_{0053}, r_{0102}, r_{0103}, r_{1130}, r_{1131}, r_{1200}$ and as a modifier in $r_{0053}, r_{0102}, r_{0103}, r_{0457}, r_{1130}, r_{1131}, r_{1200}$).

$$\frac{d}{dt}s_{0539} = v_{10} + v_{25} + v_{26} + v_{266} + v_{267} + v_{277} - v_{129} \quad (974)$$

8.162 Species s_0542

Name CMP-3-deoxy-D-manno-octulosonate

SBO:0000247 simple chemical

Notes iJO1366:M_ckdo_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in r_{0102}, r_{0103} and as a product in r_{0105} and as a modifier in $r_{0102}, r_{0103}, r_{0105}$).

$$\frac{d}{dt}s_{0542} = v_{27} - v_{25} - v_{26} \quad (975)$$

8.163 Species s_0543

Name CO2

SBO:0000247 simple chemical

Notes iJO1366:M_co2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 64 reactions (as a reactant in $r_{0388}, r_{0489}, r_{0755}, r_{1141}, r_{1551}$ and as a product in $r_{0009}, r_{0038}, r_{0078}, r_{0147}, r_{0150}, r_{0166}, r_{0222}, r_{0227}, r_{0367}, r_{0436}, r_{0499}, r_{0739}, r_{0788}, r_{0806}, r_{1021}, r_{1064}, r_{1068}, r_{1123}, r_{1124}, r_{1201}, r_{1224}, r_{1225}, r_{1245}, r_{1251}, r_{1255}, r_{1346}, r_{1421}$ and as a modifier in $r_{0009}, r_{0038}, r_{0078}, r_{0147}, r_{0150}, r_{0166}, r_{0222}, r_{0227}, r_{0367}, r_{0388}, r_{0436}, r_{0489}, r_{0499}, r_{0739}, r_{0755}, r_{0788}, r_{0806}, r_{1021}, r_{1064}, r_{1068}, r_{1123}, r_{1124}, r_{1141}, r_{1201}, r_{1224}, r_{1225}, r_{1245}, r_{1251}, r_{1255}, r_{1346}, r_{1421}, r_{1551}$).

$$\begin{aligned}\frac{d}{dt}s_{-0543} = & v_3 + v_9 + v_{16} + v_{48} + v_{51} + v_{53} + v_{66} + v_{69} + v_{107} + 2v_{124} + v_{134} + v_{189} \\ & + v_{209} + v_{217} + v_{247} + v_{256} + v_{259} + v_{264} + v_{265} + v_{278} + v_{296} + v_{297} \\ & + v_{300} + v_{302} + v_{304} + v_{332} + 4v_{360} - v_{117} - v_{132} - v_{194} - v_{271} - v_{369}\end{aligned}\quad (976)$$

8.164 Species s_-0545

Name CO2

SBO:0000247 simple chemical

Notes iJO1366:M_co2_e

Initial concentration 0 mmol·l⁻¹

This species takes part in one reaction (as a product in [r_1551](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{-0545} = 0 \quad (977)$$

8.165 Species s_-0546

Name Co2+

SBO:0000247 simple chemical

Notes iJO1366:M_cobalt2_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1557](#) and as a modifier in [r_1557](#), [r_2584](#)).

$$\frac{d}{dt}s_{-0546} = v_{370} - 2.5 \cdot 10^{-5}v_{399} \quad (978)$$

8.166 Species s_-0548

Name Co2+

SBO:0000247 simple chemical

Notes iJO1366:M_cobalt2_e

Initial concentration 1 mmol·l⁻¹

This species takes part in two reactions (as a reactant in [r_1557](#) and as a modifier in [r_1557](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{-0548} = 0 \quad (979)$$

8.167 Species s_0555

Name Coenzyme A

SBO:0000247 simple chemical

Notes iJO1366:M_coa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 56 reactions (as a reactant in r_0224, r_0724, r_1218, r_1251, r_1252, r_1255, r_1315, r_2584 and as a product in r_0067, r_0147, r_0230, r_0231, r_0232, r_0233, r_0234, r_0235, r_0236, r_0428, r_0488, r_0579, r_0580, r_0581, r_0658, r_0771, r_0935, r_0999, r_1301, r_1338 and as a modifier in r_0067, r_0147, r_0224, r_0230, r_0231, r_0232, r_0233, r_0234, r_0235, r_0236, r_0428, r_0488, r_0579, r_0580, r_0581, r_0658, r_0724, r_0771, r_0935, r_0999, r_1218, r_1251, r_1252, r_1255, r_1301, r_1315, r_1338, r_2584).

$$\begin{aligned}\frac{d}{dt}s_{0555} = & v_{15} + v_{48} + v_{70} + v_{71} + v_{72} + v_{73} + v_{74} + v_{75} + v_{76} + v_{123} + v_{131} \\ & + v_{157} + v_{158} + v_{159} + v_{166} + v_{202} + v_{231} + v_{243} + v_{317} + v_{329} \\ & - v_{67} - v_{184} - v_{292} - v_{302} - v_{303} - v_{304} - v_{322} - 5.76 \cdot 10^{-4}v_{399}\end{aligned}\quad (980)$$

8.168 Species s_0565

Name Coproporphyrinogen III

SBO:0000247 simple chemical

Notes iJO1366:M_cppg3_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in r_0436 and as a product in r_1421 and as a modifier in r_0436, r_1421).

$$\frac{d}{dt}s_{0565} = v_{360} - v_{124} \quad (981)$$

8.169 Species s_0574

Name Crotonoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_b2coa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0266](#) and as a product in [r_0120](#) and as a modifier in [r_0120](#), [r_0266](#)).

$$\frac{d}{dt}s_{0574} = v_{29} - v_{86} \quad (982)$$

8.170 Species s_0575

Name CTP

SBO:0000247 simple chemical

Notes iJO1366:M_ctp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 18 reactions (as a reactant in [r_0054](#), [r_0105](#), [r_0418](#), [r_0419](#), [r_1200](#), [r_1277](#), [r_2584](#) and as a product in [r_0440](#), [r_1039](#) and as a modifier in [r_0054](#), [r_0105](#), [r_0418](#), [r_0419](#), [r_0440](#), [r_1039](#), [r_1200](#), [r_1277](#), [r_2584](#)).

$$\frac{d}{dt}s_{0575} = v_{125} + v_{248} - v_{11} - v_{27} - v_{118} - v_{119} - v_{277} - v_{310} - 0.1335v_{399} \quad (983)$$

8.171 Species s_0579

Name Cu2+

SBO:0000247 simple chemical

Notes iJO1366:M_cu2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [r_0968](#), [r_2584](#) and as a product in [r_0384](#), [r_0964](#), [r_1565](#) and as a modifier in [r_0384](#), [r_0964](#), [r_0968](#), [r_1565](#), [r_2584](#)).

$$\frac{d}{dt}s_{0579} = v_{114} + v_{237} + v_{371} - v_{239} - 7.09 \cdot 10^{-4}v_{399} \quad (984)$$

8.172 Species s_0581

Name Cu2+

SBO:0000247 simple chemical

Notes iJO1366:M_cu2_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1565](#) and as a modifier in [r_1565](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{0581} = 0 \quad (985)$$

8.173 Species s_0585

Name cyclic pyranopterin monophosphate

SBO:0000247 simple chemical

Notes iJO1366:M_cpmp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0968](#) and as a product in [r_0445](#) and as a modifier in [r_0445](#), [r_0968](#)).

$$\frac{d}{dt}s_{0585} = v_{126} - v_{239} \quad (986)$$

8.174 Species s_0599

Name D-4'-Phosphopantetheate

SBO:0000247 simple chemical

Notes iJO1366:M_4ppan_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1200](#) and as a product in [r_1075](#) and as a modifier in [r_1075](#), [r_1200](#)).

$$\frac{d}{dt}s_{0599} = v_{261} - v_{277} \quad (987)$$

8.175 Species s_0600

Name D-Alanine

SBO:0000247 simple chemical

Notes iJO1366:M_ala_DASH_D_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0463](#) and as a product in [r_0310](#), [r_0970](#) and as a modifier in [r_0310](#), [r_0463](#), [r_0970](#)).

$$\frac{d}{dt}s_{0600} = v_{100} + v_{241} - 2v_{130} \quad (988)$$

8.176 Species s_0603

Name D-Alanyl-D-alanine

SBO:0000247 simple chemical

Notes iJO1366:M_alaala_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1401](#) and as a product in [r_0463](#) and as a modifier in [r_0463](#), [r_1401](#)).

$$\frac{d}{dt}s_{0603} = v_{130} - v_{355} \quad (989)$$

8.177 Species s_0611

Name D-Arabinose 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_ara5p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0100](#) and as a product in [r_0355](#) and as a modifier in [r_0100](#), [r_0355](#)).

$$\frac{d}{dt}s_{0611} = v_{103} - v_{23} \quad (990)$$

8.178 Species s_0620

Name D-erythro-1-(Imidazol-4-yl)glycerol 3-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_eig3p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0785](#) and as a product in [r_0784](#) and as a modifier in [r_0784](#), [r_0785](#)).

$$\frac{d}{dt}s_{0620} = v_{205} - v_{206} \quad (991)$$

8.179 Species s_0621

Name D-Erythrose 4-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_e4p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_0101](#), [r_0574](#), [r_1356](#) and as a product in [r_1358](#) and as a modifier in [r_0101](#), [r_0574](#), [r_1356](#), [r_1358](#)).

$$\frac{d}{dt}s_{0621} = v_{339} - v_{24} - v_{155} - v_{337} \quad (992)$$

8.180 Species s_0622

Name D-Fructose

SBO:0000247 simple chemical

Notes iJO1366:M_fru_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0761](#), [r_1714](#) and as a product in [r_1432](#) and as a modifier in [r_0761](#), [r_1432](#), [r_1714](#)).

$$\frac{d}{dt}s_{0622} = v_{364} - v_{195} - v_{376} \quad (993)$$

8.181 Species s_0627

Name D-Fructose 6-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_f6p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in [r_0684](#), [r_1356](#), [r_1358](#) and as a product in [r_0664](#), [r_0761](#), [r_1714](#) and as a modifier in [r_0664](#), [r_0684](#), [r_0761](#), [r_1356](#), [r_1358](#), [r_1714](#)).

$$\frac{d}{dt}s_{0627} = v_{168} + v_{195} + v_{376} - v_{176} - v_{337} - v_{339} \quad (994)$$

8.182 Species s_0653

Name D-Glucosamine 1-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_gam1p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0658](#) and as a product in [r_1150](#) and as a modifier in [r_0658](#), [r_1150](#)).

$$\frac{d}{dt}s_{0653} = v_{272} - v_{166} \quad (995)$$

8.183 Species s_0654

Name D-Glucosamine 6-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_gam6p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1150](#) and as a product in [r_0684](#) and as a modifier in [r_0684](#), [r_1150](#)).

$$\frac{d}{dt}s_{0654} = v_{176} - v_{272} \quad (996)$$

8.184 Species s_0657

Name D-Glucose

SBO:0000247 simple chemical

Notes iJO1366:M_glc_DASH_D_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in eight reactions (as a reactant in [r_0762](#), [r_1432](#), [r_1622](#) and as a product in [r_1621](#) and as a modifier in [r_0762](#), [r_1432](#), [r_1621](#), [r_1622](#)).

$$\frac{d}{dt}s_{0657} = v_{374} - v_{196} - v_{364} - v_{375} \quad (997)$$

8.185 Species s_0659

Name D-Glucose

SBO:0000247 simple chemical

Notes iJO1366:M_glc_DASH_D_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1621](#) and as a modifier in [r_1621](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{0659} = 0 \quad (998)$$

8.186 Species s_0663

Name D-Glucose 6-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_g6p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_0660](#), [r_0664](#) and as a product in [r_0762](#), [r_1622](#) and as a modifier in [r_0660](#), [r_0664](#), [r_0762](#), [r_1622](#)).

$$\frac{d}{dt}s_{0663} = v_{196} + v_{375} - v_{167} - v_{168} \quad (999)$$

8.187 Species s_0671

Name D-Glutamate

SBO:0000247 simple chemical

Notes iJO1366:M_glu_DASH_D_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1399](#) and as a product in [r_0676](#) and as a modifier in [r_0676](#), [r_1399](#)).

$$\frac{d}{dt}s_{0671} = v_{171} - v_{353} \quad (1000)$$

8.188 Species s_0675

Name D-Glycerate 2-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_2pg_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0538](#) and as a product in [r_0697](#), [r_1153](#) and as a modifier in [r_0538](#), [r_0697](#), [r_1153](#)).

$$\frac{d}{dt}s_{0675} = v_{180} + v_{275} - v_{151} \quad (1001)$$

8.189 Species s_0704

Name D-Ribulose 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_ru5p_DASH_D_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_0092](#), [r_0355](#), [r_1284](#) and as a product in [r_1285](#) and as a modifier in [r_0092](#), [r_0355](#), [r_1284](#), [r_1285](#)).

$$\frac{d}{dt}s_{0704} = v_{314} - v_{19} - v_{103} - v_{313} \quad (1002)$$

8.190 Species s_0721

Name D-Xylulose 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_xu5p_DASH_D_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1285](#) and as a product in [r_1357](#), [r_1358](#) and as a modifier in [r_1285](#), [r_1357](#), [r_1358](#)).

$$\frac{d}{dt}s_{0721} = v_{338} + v_{339} - v_{314} \quad (1003)$$

8.191 Species s_0726

Name dATP

SBO:0000247 simple chemical

Notes iJO1366:M_datp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1276](#) and as a modifier in [r_1276](#), [r_2584](#)).

$$\frac{d}{dt}s_{0726} = v_{309} - 0.02617v_{399} \quad (1004)$$

8.192 Species s_0731

Name dCTP

SBO:0000247 simple chemical

Notes iJO1366:M_dctp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1277](#) and as a modifier in [r_1277](#), [r_2584](#)).

$$\frac{d}{dt}s_{0731} = v_{310} - 0.02702v_{399} \quad (1005)$$

8.193 Species s_0732

Name Deamino-NAD+

SBO:0000247 simple chemical

Notes iJO1366:M_dnad_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1008](#) and as a product in [r_1019](#) and as a modifier in [r_1008](#), [r_1019](#)).

$$\frac{d}{dt}s_{0732} = v_{246} - v_{245} \quad (1006)$$

8.194 Species s_0737

Name Decanoyl-CoA (n-C10:0CoA)

SBO:0000247 simple chemical

Notes iJO1366:M_dcacoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0232](#) and as a product in [r_0267](#) and as a modifier in [r_0232](#), [r_0267](#)).

$$\frac{d}{dt}s_{0737} = v_{87} - v_{72} \quad (1007)$$

8.195 Species s_0738

Name dehydroglycine

SBO:0000247 simple chemical

Notes iJO1366:M_dhgly_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1346](#) and as a product in [r_1375](#) and as a modifier in [r_1346](#), [r_1375](#)).

$$\frac{d}{dt}s_{0738} = v_{343} - v_{332} \quad (1008)$$

8.196 Species s_0754

Name Dephospho-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_dpcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0488](#) and as a product in [r_1074](#) and as a modifier in [r_0488](#), [r_1074](#)).

$$\frac{d}{dt}s_{0754} = v_{260} - v_{131} \quad (1009)$$

8.197 Species s_0755

Name Dethiobiotin

SBO:0000247 simple chemical

Notes iJO1366:M_dtbt_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0383](#) and as a product in [r_0489](#) and as a modifier in [r_0383](#), [r_0489](#)).

$$\frac{d}{dt}s_{0755} = v_{132} - v_{113} \quad (1010)$$

8.198 Species s_0760

Name dGTP

SBO:0000247 simple chemical

Notes iJO1366:M_dgtp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1278](#) and as a modifier in [r_1278](#), [r_2584](#)).

$$\frac{d}{dt}s_{0760} = v_{311} - 0.02702v_{399} \quad (1011)$$

8.199 Species s_0765

Name Dihydronoopterin

SBO:0000247 simple chemical

Notes iJO1366:M_dhnpt_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0507](#) and as a product in [r_2310](#) and as a modifier in [r_0507](#), [r_2310](#)).

$$\frac{d}{dt}s_{0765} = v_{392} - v_{141} \quad (1012)$$

8.200 Species s_0766

Name Dihydronoopterin monophosphate

SBO:0000247 simple chemical

Notes iJO1366:M_dhpmp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2310](#) and as a product in [r_0510](#) and as a modifier in [r_0510](#), [r_2310](#)).

$$\frac{d}{dt}s_{0766} = v_{142} - v_{392} \quad (1013)$$

8.201 Species s_0767

Name Dihydropteroate

SBO:0000247 simple chemical

Notes iJO1366:M_dhpt_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0505](#) and as a product in [r_0515](#) and as a modifier in [r_0505](#), [r_0515](#)).

$$\frac{d}{dt}s_{0767} = v_{145} - v_{140} \quad (1014)$$

8.202 Species s_0768

Name dihydrosirohydrochlorin

SBO:0000247 simple chemical

Notes iJO1366:M_dscl_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1306](#) and as a product in [r_1422](#) and as a modifier in [r_1306](#), [r_1422](#)).

$$\frac{d}{dt}s_{0768} = v_{361} - v_{320} \quad (1015)$$

8.203 Species s_0772

Name Dihydroxyacetone phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_dhap_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0712](#), [r_1259](#) and as a product in [r_1363](#) and as a modifier in [r_0712](#), [r_1259](#), [r_1363](#)).

$$\frac{d}{dt}s_{0772} = v_{340} - v_{183} - v_{305} \quad (1016)$$

8.204 Species s_0779

Name Dimethylallyl diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_dmpp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0522](#) and as a product in [r_0014](#) and as a modifier in [r_0014](#), [r_0522](#)).

$$\frac{d}{dt}s_{0779} = v_7 - v_{148} \quad (1017)$$

8.205 Species s_0783

Name Diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_ppi_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 87 reactions (as a reactant in [r_1222](#) and as a product in [r_0054](#), [r_0105](#), [r_0257](#), [r_0259](#), [r_0260](#), [r_0348](#), [r_0361](#), [r_0365](#), [r_0374](#), [r_0385](#), [r_0386](#), [r_0418](#), [r_0419](#), [r_0445](#), [r_0510](#), [r_0515](#), [r_0522](#), [r_0533](#), [r_0611](#), [r_0655](#), [r_0682](#), [r_0687](#), [r_0741](#), [r_0745](#), [r_0775](#), [r_0951](#), [r_0965](#), [r_0969](#), [r_1008](#), [r_1019](#), [r_1021](#), [r_1063](#), [r_1067](#), [r_1074](#), [r_1076](#), [r_1200](#), [r_1205](#), [r_1329](#), [r_1344](#), [r_1346](#), [r_1392](#), [r_1410](#), [r_2584](#) and as a modifier in [r_0054](#), [r_0105](#), [r_0257](#), [r_0259](#), [r_0260](#), [r_0348](#), [r_0361](#), [r_0365](#), [r_0374](#), [r_0385](#), [r_0386](#), [r_0418](#), [r_0419](#), [r_0445](#), [r_0510](#), [r_0515](#), [r_0522](#), [r_0533](#), [r_0611](#), [r_0655](#), [r_0682](#),

[r_0687](#), [r_0741](#), [r_0745](#), [r_0775](#), [r_0951](#), [r_0965](#), [r_0969](#), [r_1008](#), [r_1019](#), [r_1021](#), [r_1063](#),
[r_1067](#), [r_1074](#), [r_1076](#), [r_1200](#), [r_1205](#), [r_1222](#), [r_1329](#), [r_1344](#), [r_1346](#), [r_1392](#), [r_1410](#)).

$$\begin{aligned}\frac{d}{dt}s_{-0783} = & v_{11} + v_{27} + v_{83} + v_{84} + v_{85} + v_{101} + v_{105} + v_{106} + v_{112} + v_{115} + v_{116} + v_{118} \\ & + v_{119} + v_{126} + v_{142} + v_{145} + v_{148} + v_{150} + v_{161} + v_{165} + v_{174} + v_{178} + v_{190} \\ & + v_{192} + v_{203} + v_{233} + v_{238} + v_{240} + v_{245} + v_{246} + v_{247} + 5v_{255} + v_{258} + v_{260} \\ & + v_{262} + v_{277} + v_{281} + v_{325} + v_{330} + v_{332} + v_{350} + 8v_{358} + 0.7739v_{399} - v_{294}\end{aligned}\tag{1018}$$

8.206 Species s_0785

Name Dodecanoate (n-C12:0)

SBO:0000247 simple chemical

Notes iJO1366:M_ddca_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0257](#) and as a product in [r_0579](#) and as a modifier in [r_0257](#), [r_0579](#)).

$$\frac{d}{dt}s_{-0785} = v_{157} - v_{83}\tag{1019}$$

8.207 Species s_0789

Name Dodecanoyl-ACP (n-C12:0ACP)

SBO:0000247 simple chemical

Notes iJO1366:M_ddcaACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0166](#) and as a product in [r_0257](#) and as a modifier in [r_0166](#), [r_0257](#)).

$$\frac{d}{dt}s_{-0789} = v_{83} - v_{53}\tag{1020}$$

8.208 Species s_0790

Name Dodecanoyl-CoA (n-C12:0CoA)

SBO:0000247 simple chemical

Notes iJO1366:M_ddcacoa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0233](#), [r_0579](#) and as a product in [r_0268](#) and as a modifier in [r_0233](#), [r_0268](#), [r_0579](#)).

$$\frac{d}{dt}s_{0790} = v_{88} - v_{73} - v_{157} \quad (1021)$$

8.209 Species s_0795

Name dTDP

SBO:0000247 simple chemical

Notes iJO1366:M_dtdp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1043](#) and as a product in [r_0532](#) and as a modifier in [r_0532](#), [r_1043](#)).

$$\frac{d}{dt}s_{0795} = v_{149} - v_{249} \quad (1022)$$

8.210 Species s_0802

Name dTMP

SBO:0000247 simple chemical

Notes iJO1366:M_dttmp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0532](#) and as a product in [r_1353](#) and as a modifier in [r_0532](#), [r_1353](#)).

$$\frac{d}{dt}s_{0802} = v_{336} - v_{149} \quad (1023)$$

8.211 Species s_0805

Name dTPP

SBO:0000247 simple chemical

Notes iJO1366:M_dttp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1043](#) and as a modifier in [r_1043](#), [r_2584](#)).

$$\frac{d}{dt}s_{0805} = v_{249} - 0.02617v_{399} \quad (1024)$$

8.212 Species s_0807

Name dUMP

SBO:0000247 simple chemical

Notes iJO1366:M_dump_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1353](#) and as a product in [r_0533](#) and as a modifier in [r_0533](#), [r_1353](#)).

$$\frac{d}{dt}s_{0807} = v_{150} - v_{336} \quad (1025)$$

8.213 Species s_0810

Name dUTP

SBO:0000247 simple chemical

Notes iJO1366:M_dutp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0533](#) and as a product in [r_1279](#) and as a modifier in [r_0533](#), [r_1279](#)).

$$\frac{d}{dt}s_{0810} = v_{312} - v_{150} \quad (1026)$$

8.214 Species s_0812

Name Enoylglutaryl-[acyl-carrier protein] methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_egmeACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0563](#) and as a product in [r_0145](#) and as a modifier in [r_0145](#), [r_0563](#)).

$$\frac{d}{dt}s_{0812} = v_{46} - v_{152} \quad (1027)$$

8.215 Species s_0813

Name Enoylpimeloyl-[acyl-carrier protein] methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_epmeACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0564](#) and as a product in [r_0148](#) and as a modifier in [r_0148](#), [r_0564](#)).

$$\frac{d}{dt}s_{0813} = v_{49} - v_{153} \quad (1028)$$

8.216 Species s_0826

Name Farnesyl diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_frdp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_1063](#), [r_1410](#) and as a product in [r_0655](#) and as a modifier in [r_0655](#), [r_1063](#), [r_1410](#)).

$$\frac{d}{dt}s_{0826} = v_{165} - v_{255} - v_{358} \quad (1029)$$

8.217 Species s_0838

Name Fe2+

SBO:0000247 simple chemical

Notes iJO1366:M_fe2_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in twelve reactions (as a reactant in [r_0602](#), [r_0797](#), [r_0798](#), [r_1307](#), [r_2584](#) and as a product in [r_1792](#) and as a modifier in [r_0602](#), [r_0797](#), [r_0798](#), [r_1307](#), [r_1792](#), [r_2584](#)).

$$\frac{d}{dt}s_{0838} = v_{377} - v_{160} - 2v_{211} - 2v_{212} - v_{321} - 0.006715v_{399} \quad (1030)$$

8.218 Species s_0840

Name Fe2+

SBO:0000247 simple chemical

Notes iJO1366:M_fe2_e

Initial concentration 1 mmol·l⁻¹

This species takes part in two reactions (as a reactant in [r_1792](#) and as a modifier in [r_1792](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{0840} = 0 \quad (1031)$$

8.219 Species s_0841

Name Fe3+

SBO:0000247 simple chemical

Notes iJO1366:M_fe3_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1793](#) and as a modifier in [r_1793](#), [r_2584](#)).

$$\frac{d}{dt}s_{0841} = v_{378} - 0.007808v_{399} \quad (1032)$$

8.220 Species s_0843

Name Fe3+

SBO:0000247 simple chemical

Notes iJO1366:M_fe3_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1793](#) and as a modifier in [r_1793](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{0843} = 0 \quad (1033)$$

8.221 Species s_0859

Name Flavin adenine dinucleotide oxidized

SBO:0000247 simple chemical

Notes iJO1366:M_fad_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 26 reactions (as a reactant in [r_0576](#), [r_2584](#) and as a product in [r_0266](#), [r_0267](#), [r_0268](#), [r_0269](#), [r_0270](#), [r_0272](#), [r_0273](#), [r_0611](#), [r_0797](#), [r_0798](#), [r_0800](#) and as a modifier in [r_0266](#), [r_0267](#), [r_0268](#), [r_0269](#), [r_0270](#), [r_0272](#), [r_0273](#), [r_0576](#), [r_0611](#), [r_0797](#), [r_0798](#), [r_0800](#), [r_2584](#)).

$$\begin{aligned} \frac{d}{dt}s_{0859} = & v_{86} + v_{87} + v_{88} + v_{89} + v_{90} + v_{91} + v_{92} + v_{161} \\ & + v_{211} + v_{212} + v_{214} - v_{156} - 2.23 \cdot 10^{-4}v_{399} \end{aligned} \quad (1034)$$

8.222 Species s_0860

Name Flavin adenine dinucleotide reduced

SBO:0000247 simple chemical

Notes iJO1366:M_fadh2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 22 reactions (as a reactant in [r_0266](#), [r_0267](#), [r_0268](#), [r_0269](#), [r_0270](#), [r_0272](#), [r_0273](#), [r_0797](#), [r_0798](#), [r_0800](#) and as a product in [r_0576](#) and as a modifier in [r_0266](#), [r_0267](#), [r_0268](#), [r_0269](#), [r_0270](#), [r_0272](#), [r_0273](#), [r_0576](#), [r_0797](#), [r_0798](#), [r_0800](#)).

$$\frac{d}{dt}s_{0860} = v_{156} - v_{86} - v_{87} - v_{88} - v_{89} - v_{90} - v_{91} - v_{92} - v_{211} - v_{212} - v_{214} \quad (1035)$$

8.223 Species s_0861

Name Flavodoxin reduced

SBO:0000247 simple chemical

Notes iJO1366:M_flxr_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in [r_0084](#), [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#) and as a product in [r_1255](#) and as a modifier in [r_0084](#), [r_1255](#), [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#)).

$$\frac{d}{dt}s_{0861} = 2v_{304} - 2v_{17} - 2v_{309} - 2v_{310} - 2v_{311} - 2v_{312} \quad (1036)$$

8.224 Species s_0862

Name flavodoxin semi oxidized

SBO:0000247 simple chemical

Notes iJO1366:M_flxso_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in [r_1255](#) and as a product in [r_0084](#), [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#) and as a modifier in [r_0084](#), [r_1255](#), [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#)).

$$\frac{d}{dt}s_{0862} = 2v_{17} + 2v_{309} + 2v_{310} + 2v_{311} + 2v_{312} - 2v_{304} \quad (1037)$$

8.225 Species s_0863

Name FMN

SBO:0000247 simple chemical

Notes iJO1366:M_fmn_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0611](#) and as a product in [r_1264](#) and as a modifier in [r_0611](#), [r_1264](#)).

$$\frac{d}{dt}s_{0863} = v_{306} - v_{161} \quad (1038)$$

8.226 Species s_0867

Name Formate

SBO:0000247 simple chemical

Notes iJO1366:M_for_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [r_0622](#), [r_0648](#) and as a product in [r_0092](#), [r_0179](#), [r_0744](#), [r_0745](#), [r_1252](#) and as a modifier in [r_0092](#), [r_0179](#), [r_0622](#), [r_0648](#), [r_0744](#), [r_0745](#), [r_1252](#)).

$$\frac{d}{dt}s_{0867} = v_{19} + 2v_{57} + v_{191} + v_{192} + v_{303} - v_{162} - v_{164} \quad (1039)$$

8.227 Species s_0875

Name Fumarate

SBO:0000247 simple chemical

Notes iJO1366:M_fum_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_0632](#) and as a product in [r_0302](#), [r_0304](#), [r_0360](#) and as a modifier in [r_0302](#), [r_0304](#), [r_0360](#), [r_0632](#)).

$$\frac{d}{dt}s_{0875} = v_{96} + v_{98} + v_{104} - v_{163} \quad (1040)$$

8.228 Species s_0896

Name GDP

SBO:0000247 simple chemical

Notes iJO1366:M_gdp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_1045](#) and as a product in [r_0303](#), [r_0754](#), [r_1329](#) and as a modifier in [r_0303](#), [r_0754](#), [r_1045](#), [r_1329](#)).

$$\frac{d}{dt}s_{0896} = v_{97} + v_{193} + v_{325} - v_{250} \quad (1041)$$

8.229 Species s_0903

Name Geranyl diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_grdp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0655](#) and as a product in [r_0522](#) and as a modifier in [r_0522](#), [r_0655](#)).

$$\frac{d}{dt}s_{0903} = v_{148} - v_{165} \quad (1042)$$

8.230 Species s_0910

Name Glutaryl-[acyl-carrier protein] methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_gmeACP_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0150](#) and as a product in [r_0563](#) and as a modifier in [r_0150](#), [r_0563](#)).

$$\frac{d}{dt}s_{0910} = v_{152} - v_{51} \quad (1043)$$

8.231 Species s_0913

Name Glyceraldehyde 3-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_g3p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in [r_0009](#), [r_0695](#), [r_1357](#), [r_1358](#), [r_1363](#) and as a product in [r_0056](#), [r_1356](#), [r_1367](#) and as a modifier in [r_0009](#), [r_0056](#), [r_0695](#), [r_1356](#), [r_1357](#), [r_1358](#), [r_1363](#), [r_1367](#)).

$$\frac{d}{dt}s_{0913} = v_{12} + v_{337} + v_{341} - v_3 - v_{179} - v_{338} - v_{339} - v_{340} \quad (1044)$$

8.232 Species s_0920

Name Glycerol 3-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_glyc3p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0706](#), [r_0707](#) and as a product in [r_0712](#) and as a modifier in [r_0706](#), [r_0707](#), [r_0712](#)).

$$\frac{d}{dt}s_{0920} = v_{183} - v_{181} - v_{182} \quad (1045)$$

8.233 Species s_0929

Name Glycine

SBO:0000247 simple chemical

Notes iJO1366:M_gly_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [r_1214](#), [r_2584](#) and as a product in [r_0724](#), [r_0726](#), [r_1348](#) and as a modifier in [r_0724](#), [r_0726](#), [r_1214](#), [r_1348](#), [r_2584](#)).

$$\frac{d}{dt}s_{0929} = v_{184} + v_{185} + v_{334} - v_{289} - 0.6126v_{399} \quad (1046)$$

8.234 Species s_0936

Name Glycolaldehyde

SBO:0000247 simple chemical

Notes iJO1366:M_gcald_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0731](#) and as a product in [r_0507](#) and as a modifier in [r_0507](#), [r_0731](#)).

$$\frac{d}{dt}s_{0936} = v_{141} - v_{186} \quad (1047)$$

8.235 Species s_0937

Name Glycolate

SBO:0000247 simple chemical

Notes iJO1366:M_glyclt_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in r_0734, r_0735 and as a product in r_0731 and as a modifier in r_0731, r_0734, r_0735).

$$\frac{d}{dt}s_{0937} = v_{186} - v_{187} - v_{188} \quad (1048)$$

8.236 Species s_0941

Name Glyoxylate

SBO:0000247 simple chemical

Notes iJO1366:M_glx_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in r_0739 and as a product in r_0734, r_0735 and as a modifier in r_0734, r_0735, r_0739).

$$\frac{d}{dt}s_{0941} = v_{187} + v_{188} - 2v_{189} \quad (1049)$$

8.237 Species s_0942

Name GMP

SBO:0000247 simple chemical

Notes iJO1366:M_gmp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in r_0754 and as a product in r_0741 and as a modifier in r_0741, r_0754).

$$\frac{d}{dt}s_{0942} = v_{190} - v_{193} \quad (1050)$$

8.238 Species s_0945

Name GTP

SBO:0000247 simple chemical

Notes iJO1366:M_gtp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 20 reactions (as a reactant in r_0303, r_0385, r_0386, r_0445, r_0744, r_0745, r_1278, r_1329, r_2584 and as a product in r_1045 and as a modifier in r_0303, r_0385, r_0386, r_0445, r_0744, r_0745, r_1045, r_1278, r_1329, r_2584).

$$\frac{d}{dt}s_{0945} = v_{250} - v_{97} - v_{115} - v_{116} - v_{126} - v_{191} - v_{192} - v_{311} - v_{325} - 0.2151v_{399} \quad (1051)$$

8.239 Species s_0971

Name Hexadecanoate (n-C16:0)

SBO:0000247 simple chemical

Notes iJO1366:M_hdca_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in r_0259 and as a product in r_0580 and as a modifier in r_0259, r_0580).

$$\frac{d}{dt}s_{0971} = v_{158} - v_{84} \quad (1052)$$

8.240 Species s_0976

Name Hexadecenoate (n-C16:1)

SBO:0000247 simple chemical

Notes iJO1366:M_hdcea_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in r_0260 and as a product in r_0581 and as a modifier in r_0260, r_0581).

$$\frac{d}{dt}s_{0976} = v_{159} - v_{85} \quad (1053)$$

8.241 Species s_0979

Name Hexadecenoyl-CoA (n-C16:1CoA)

SBO:0000247 simple chemical

Notes iJO1366:M_hdcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0581](#) and as a product in [r_0096](#) and as a modifier in [r_0096](#), [r_0581](#)).

$$\frac{d}{dt}s_{0979} = v_{20} - v_{159} \quad (1054)$$

8.242 Species s_0984

Name Hexanoyl-CoA (n-C6:0CoA)

SBO:0000247 simple chemical

Notes iJO1366:M_hxcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0234](#) and as a product in [r_0270](#) and as a modifier in [r_0234](#), [r_0270](#)).

$$\frac{d}{dt}s_{0984} = v_{90} - v_{74} \quad (1055)$$

8.243 Species s_0991

Name Hydrogen peroxide

SBO:0000247 simple chemical

Notes iJO1366:M_h2o2_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0928](#) and as a product in [r_0829](#) and as a modifier in [r_0829](#), [r_0928](#)).

$$\frac{d}{dt}s_{0991} = v_{222} - v_{229} \quad (1056)$$

8.244 Species s_0994

Name Hydrogen sulfide

SBO:0000247 simple chemical

Notes iJO1366:M_h2s_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0452](#) and as a product in [r_1330](#) and as a modifier in [r_0452](#), [r_1330](#)).

$$\frac{d}{dt}s_{0994} = v_{326} - v_{128} \quad (1057)$$

8.245 Species s_0998

Name Hydroxymethylbilane

SBO:0000247 simple chemical

Notes iJO1366:M_hmbil_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1423](#) and as a product in [r_0777](#) and as a modifier in [r_0777](#), [r_1423](#)).

$$\frac{d}{dt}s_{0998} = v_{204} - v_{362} \quad (1058)$$

8.246 Species s_1005

Name Iminoaspartate

SBO:0000247 simple chemical

Notes iJO1366:M_iasp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1259](#) and as a product in [r_0829](#) and as a modifier in [r_0829](#), [r_1259](#)).

$$\frac{d}{dt}s_{1005} = v_{222} - v_{305} \quad (1059)$$

8.247 Species s_1006

Name IMP

SBO:0000247 simple chemical

Notes iJO1366:M_imp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0303](#), [r_0787](#) and as a product in [r_0786](#) and as a modifier in [r_0303](#), [r_0786](#), [r_0787](#)).

$$\frac{d}{dt}s_{1006} = v_{207} - v_{97} - v_{208} \quad (1060)$$

8.248 Species s_1009

Name Indole

SBO:0000247 simple chemical

Notes iJO1366:M_indole_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1368](#) and as a product in [r_1367](#) and as a modifier in [r_1367](#), [r_1368](#)).

$$\frac{d}{dt}s_{1009} = v_{341} - v_{342} \quad (1061)$$

8.249 Species s_1017

Name IscS sulfur acceptor protein

SBO:0000247 simple chemical

Notes iJO1366:M_iscs_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in [r_0802](#) and as a product in [r_0796](#), [r_0797](#), [r_0798](#), [r_0963](#), [r_1346](#) and as a modifier in [r_0796](#), [r_0797](#), [r_0798](#), [r_0802](#), [r_0963](#), [r_1346](#)).

$$\frac{d}{dt}s_{1017} = v_{210} + 2v_{211} + 2v_{212} + v_{236} + v_{332} - v_{216} \quad (1062)$$

8.250 Species s_1018

Name IscS with bound sulfur

SBO:0000247 simple chemical

Notes iJO1366:M_iscssh_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in [r_0796](#), [r_0797](#), [r_0798](#), [r_0963](#), [r_1346](#) and as a product in [r_0802](#) and as a modifier in [r_0796](#), [r_0797](#), [r_0798](#), [r_0802](#), [r_0963](#), [r_1346](#)).

$$\frac{d}{dt}s_{1018} = v_{216} - v_{210} - 2v_{211} - 2v_{212} - v_{236} - v_{332} \quad (1063)$$

8.251 Species s_1019

Name IscU scaffold protein

SBO:0000247 simple chemical

Notes iJO1366:M_iscu_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_0796](#), [r_0797](#) and as a product in [r_0799](#), [r_0801](#) and as a modifier in [r_0796](#), [r_0797](#), [r_0799](#), [r_0801](#)).

$$\frac{d}{dt}s_{1019} = v_{213} + v_{215} - v_{210} - v_{211} \quad (1064)$$

8.252 Species s_1020

Name IscU with bound [2Fe-2S] cluster

SBO:0000247 simple chemical

Notes iJO1366:M_iscu_DASH_2fe2s_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_0798](#), [r_0799](#) and as a product in [r_0796](#), [r_0797](#) and as a modifier in [r_0796](#), [r_0797](#), [r_0798](#), [r_0799](#)).

$$\frac{d}{dt}s_{1020} = v_{210} + v_{211} - v_{212} - v_{213} \quad (1065)$$

8.253 Species s_1021

Name IscU with bound [4Fe-4S] cluster

SBO:0000247 simple chemical

Notes iJO1366:M_iscu_DASH_4fe4s_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0801](#) and as a product in [r_0800](#) and as a modifier in [r_0800](#), [r_0801](#)).

$$\frac{d}{dt}s_{1021} = v_{214} - v_{215} \quad (1066)$$

8.254 Species s_1022

Name IscU with two bound [2Fe-2S] clusters

SBO:0000247 simple chemical

Notes iJO1366:M_iscu_DASH_2fe2s2_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0800](#) and as a product in [r_0798](#) and as a modifier in [r_0798](#), [r_0800](#)).

$$\frac{d}{dt}s_{1022} = v_{212} - v_{214} \quad (1067)$$

8.255 Species s_1027

Name Isocitrate

SBO:0000247 simple chemical

Notes iJO1366:M_icit_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0806](#) and as a product in [r_0247](#) and as a modifier in [r_0247](#), [r_0806](#)).

$$\frac{d}{dt}s_{1027} = v_{82} - v_{217} \quad (1068)$$

8.256 Species s_1028

Name Isopentenyl diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_ipdp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in ten reactions (as a reactant in r_0522, r_0655, r_1063, r_1410 and as a product in r_0015 and as a modifier in r_0015, r_0522, r_0655, r_1063, r_1410).

$$\frac{d}{dt}s_{1028} = v_8 - v_{148} - v_{165} - 5v_{255} - 8v_{358} \quad (1069)$$

8.257 Species s_1033

Name KDO(2)-lipid IV(A)

SBO:0000247 simple chemical

Notes iJO1366:M_kdo2lipid4_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in r_2584 and as a product in r_0103 and as a modifier in r_0103, r_2584).

$$\frac{d}{dt}s_{1033} = v_{26} - 0.01946v_{399} \quad (1070)$$

8.258 Species s_1038

Name KDO-lipid IV(A)

SBO:0000247 simple chemical

Notes iJO1366:M_kdolipid4_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in r_0103 and as a product in r_0102 and as a modifier in r_0102, r_0103).

$$\frac{d}{dt}s_{1038} = v_{25} - v_{26} \quad (1071)$$

8.259 Species s_1040

Name L-2-Amino-3-oxobutanoate

SBO:0000247 simple chemical

Notes iJO1366:M_2aobut_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0724](#) and as a product in [r_0848](#) and as a modifier in [r_0724](#), [r_0848](#)).

$$\frac{d}{dt}s_{1040} = v_{225} - v_{184} \quad (1072)$$

8.260 Species s_1041

Name L-Alanine

SBO:0000247 simple chemical

Notes iJO1366:M_ala_DASH_L_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in [r_0222](#), [r_0310](#), [r_1397](#), [r_2584](#) and as a product in [r_0802](#), [r_0815](#) and as a modifier in [r_0222](#), [r_0310](#), [r_0802](#), [r_0815](#), [r_1397](#), [r_2584](#)).

$$\frac{d}{dt}s_{1041} = v_{216} + v_{221} - v_{66} - v_{100} - v_{352} - 0.5137v_{399} \quad (1073)$$

8.261 Species s_1061

Name L-Arginine

SBO:0000247 simple chemical

Notes iJO1366:M_arg_DASH_L_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0360](#) and as a modifier in [r_0360](#), [r_2584](#)).

$$\frac{d}{dt}s_{1061} = v_{104} - 0.2958v_{399} \quad (1074)$$

8.262 Species s_1068

Name L-Asparagine

SBO:0000247 simple chemical

Notes iJO1366:M_asn_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0365](#) and as a modifier in [r_0365](#), [r_2584](#)).

$$\frac{d}{dt}s_{1068} = v_{106} - 0.2411v_{399} \quad (1075)$$

8.263 Species s_1072

Name L-Aspartate

SBO:0000247 simple chemical

Notes iJO1366:M_asp_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in 20 reactions (as a reactant in [r_0303](#), [r_0361](#), [r_0365](#), [r_0367](#), [r_0368](#), [r_0369](#), [r_0829](#), [r_1210](#), [r_2584](#) and as a product in [r_0370](#) and as a modifier in [r_0303](#), [r_0361](#), [r_0365](#), [r_0367](#), [r_0368](#), [r_0369](#), [r_0370](#), [r_0829](#), [r_1210](#), [r_2584](#)).

$$\frac{d}{dt}s_{1072} = v_{110} - v_{97} - v_{105} - v_{106} - v_{107} - v_{108} - v_{109} - v_{222} - v_{286} - 0.2411v_{399} \quad (1076)$$

8.264 Species s_1075

Name L-Aspartate 4-semialdehyde

SBO:0000247 simple chemical

Notes iJO1366:M_aspsa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0503](#), [r_0769](#) and as a product in [r_0371](#) and as a modifier in [r_0371](#), [r_0503](#), [r_0769](#)).

$$\frac{d}{dt}s_{1075} = v_{111} - v_{138} - v_{200} \quad (1077)$$

8.265 Species s_1081

Name L-Citrulline

SBO:0000247 simple chemical

Notes iJO1366:M_citr_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0361](#) and as a product in [r_1065](#) and as a modifier in [r_0361](#), [r_1065](#)).

$$\frac{d}{dt}s_{1081} = v_{257} - v_{105} \quad (1078)$$

8.266 Species s_1082

Name L-Cystathionine

SBO:0000247 simple chemical

Notes iJO1366:M_cyst_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0450](#) and as a product in [r_1057](#) and as a modifier in [r_0450](#), [r_1057](#)).

$$\frac{d}{dt}s_{1082} = v_{254} - v_{127} \quad (1079)$$

8.267 Species s_1083

Name L-Cysteine

SBO:0000247 simple chemical

Notes iJO1366:M_cys_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in ten reactions (as a reactant in [r_0802](#), [r_1057](#), [r_1200](#), [r_2584](#) and as a product in [r_0452](#) and as a modifier in [r_0452](#), [r_0802](#), [r_1057](#), [r_1200](#), [r_2584](#)).

$$\frac{d}{dt}s_{1083} = v_{128} - v_{216} - v_{254} - v_{277} - 0.09158v_{399} \quad (1080)$$

8.268 Species s_1095

Name L-Glutamate

SBO:0000247 simple chemical

Notes iJO1366:M_glu_DASH_L_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 56 reactions (as a reactant in r_0245, r_0370, r_0505, r_0673, r_0676, r_0683, r_0687, r_0765, r_0808, r_0815, r_0854, r_0999, r_1054, r_1081, r_1217, r_1318, r_1376, r_1425, r_2584 and as a product in r_0181, r_0349, r_0440, r_0675, r_0682, r_0684, r_0741, r_0784, r_1212 and as a modifier in r_0181, r_0245, r_0349, r_0370, r_0440, r_0505, r_0673, r_0675, r_0676, r_0682, r_0683, r_0684, r_0687, r_0741, r_0765, r_0784, r_0808, r_0815, r_0854, r_0999, r_1054, r_1081, r_1212, r_1217, r_1318, r_1376, r_1425, r_2584).

$$\frac{d}{dt}s_{1095} = v_{58} + v_{102} + v_{125} + v_{170} + v_{174} + v_{176} + v_{190} + v_{205} + v_{288} - v_{80} - v_{110} - v_{140} - v_{169} - v_{171} - v_{175} - v_{178} - v_{199} - v_{218} - v_{221} - v_{226} - v_{243} - v_{253} - v_{263} - v_{291} - v_{324} - v_{344} - v_{363} - 0.2632v_{399} \quad (1081)$$

8.269 Species s_1098

Name L-Glutamate 1-semialdehyde

SBO:0000247 simple chemical

Notes iJO1366:M_glu1sa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in r_0678 and as a product in r_0686 and as a modifier in r_0678, r_0686).

$$\frac{d}{dt}s_{1098} = v_{177} - v_{172} \quad (1082)$$

8.270 Species s_1099

Name L-Glutamate 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_glu5p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0679](#) and as a product in [r_0673](#) and as a modifier in [r_0673](#), [r_0679](#)).

$$\frac{d}{dt}s_{-1099} = v_{169} - v_{173} \quad (1083)$$

[8.271 Species s_-1100](#)

Name L-Glutamate 5-semialdehyde

SBO:0000247 simple chemical

Notes iJO1366:M_glu5sa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0835](#) and as a product in [r_0679](#) and as a modifier in [r_0679](#), [r_0835](#)).

$$\frac{d}{dt}s_{-1100} = v_{173} - v_{223} \quad (1084)$$

[8.272 Species s_-1101](#)

Name L-Glutamine

SBO:0000247 simple chemical

Notes iJO1366:M_gln_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in 20 reactions (as a reactant in [r_0181](#), [r_0349](#), [r_0440](#), [r_0682](#), [r_0684](#), [r_0741](#), [r_0784](#), [r_1212](#), [r_2584](#) and as a product in [r_0683](#) and as a modifier in [r_0181](#), [r_0349](#), [r_0440](#), [r_0682](#), [r_0683](#), [r_0684](#), [r_0741](#), [r_0784](#), [r_1212](#), [r_2584](#)).

$$\frac{d}{dt}s_{-1101} = v_{175} - v_{58} - v_{102} - v_{125} - v_{174} - v_{176} - v_{190} - v_{205} - v_{288} - 0.2632v_{399} \quad (1085)$$

[8.273 Species s_-1105](#)

Name L-Glutamyl-tRNA(Glu)

SBO:0000247 simple chemical

Notes iJO1366:M_glutrna_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0686](#) and as a product in [r_0687](#) and as a modifier in [r_0686](#), [r_0687](#)).

$$\frac{d}{dt}s_{-1105} = v_{178} - v_{177} \quad (1086)$$

8.274 Species s_1106

Name L-Histidine

SBO:0000247 simple chemical

Notes iJO1366:M_his_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0763](#) and as a modifier in [r_0763](#), [r_2584](#)).

$$\frac{d}{dt}s_{1106} = v_{197} - 0.09474v_{399} \quad (1087)$$

8.275 Species s_1109

Name L-Histidinol

SBO:0000247 simple chemical

Notes iJO1366:M_histd_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0763](#) and as a product in [r_0764](#) and as a modifier in [r_0763](#), [r_0764](#)).

$$\frac{d}{dt}s_{1109} = v_{198} - v_{197} \quad (1088)$$

8.276 Species s_1110

Name L-Histidinol phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_hisp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0764](#) and as a product in [r_0765](#) and as a modifier in [r_0764](#), [r_0765](#)).

$$\frac{d}{dt}s_{1110} = v_{199} - v_{198} \quad (1089)$$

8.277 Species s_1112

Name L-Homocysteine

SBO:0000247 simple chemical

Notes iJO1366:M_hcys_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0954](#) and as a product in [r_0450](#), [r_1291](#) and as a modifier in [r_0450](#), [r_0954](#), [r_1291](#)).

$$\frac{d}{dt}s_{1112} = v_{127} + v_{316} - v_{234} \quad (1090)$$

8.278 Species s_1113

Name L-Homoserine

SBO:0000247 simple chemical

Notes iJO1366:M_hom_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0770](#), [r_0771](#) and as a product in [r_0769](#) and as a modifier in [r_0769](#), [r_0770](#), [r_0771](#)).

$$\frac{d}{dt}s_{1113} = v_{200} - v_{201} - v_{202} \quad (1091)$$

8.279 Species s_1119

Name L-Isoleucine

SBO:0000247 simple chemical

Notes iJO1366:M_ile_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0808](#) and as a modifier in [r_0808](#), [r_2584](#)).

$$\frac{d}{dt}s_{1119} = v_{218} - 0.2905v_{399} \quad (1092)$$

8.280 Species s_1127

Name L-Leucine

SBO:0000247 simple chemical

Notes iJO1366:M_leu_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0854](#) and as a modifier in [r_0854](#), [r_2584](#)).

$$\frac{d}{dt}s_{1127} = v_{226} - 0.4505v_{399} \quad (1093)$$

8.281 Species s_1131

Name L-Lysine

SBO:0000247 simple chemical

Notes iJO1366:M_lys_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0499](#) and as a modifier in [r_0499](#), [r_2584](#)).

$$\frac{d}{dt}s_{1131} = v_{134} - 0.3432v_{399} \quad (1094)$$

8.282 Species s_1138

Name L-Malate

SBO:0000247 simple chemical

Notes iJO1366:M_mal_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0925](#) and as a product in [r_0632](#), [r_0928](#) and as a modifier in [r_0632](#), [r_0925](#), [r_0928](#)).

$$\frac{d}{dt}s_{1138} = v_{163} + v_{229} - v_{228} \quad (1095)$$

8.283 Species s_1141

Name L-Methionine

SBO:0000247 simple chemical

Notes iJO1366:M_met_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in ten reactions (as a reactant in [r_0951](#), [r_2584](#) and as a product in [r_0383](#), [r_0954](#), [r_1375](#) and as a modifier in [r_0383](#), [r_0951](#), [r_0954](#), [r_1375](#), [r_2584](#)).

$$\frac{d}{dt}s_{1141} = v_{113} + v_{234} + v_{343} - v_{233} - 0.1537v_{399} \quad (1096)$$

8.284 Species s_1151

Name L-Phenylalanine

SBO:0000247 simple chemical

Notes iJO1366:M_phe_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1081](#) and as a modifier in [r_1081](#), [r_2584](#)).

$$\frac{d}{dt}s_{1151} = v_{263} - 0.1853v_{399} \quad (1097)$$

8.285 Species s_1155

Name L-Proline

SBO:0000247 simple chemical

Notes iJO1366:M_pro_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1250](#) and as a modifier in [r_1250](#), [r_2584](#)).

$$\frac{d}{dt}s_{1155} = v_{301} - 0.2211v_{399} \quad (1098)$$

8.286 Species s_1170

Name L-Serine

SBO:0000247 simple chemical

Notes iJO1366:M_ser_DASH_L_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in [r_0726](#), [r_1130](#), [r_1131](#), [r_1301](#), [r_2584](#) and as a product in [r_1134](#) and as a modifier in [r_0726](#), [r_1130](#), [r_1131](#), [r_1134](#), [r_1301](#), [r_2584](#)).

$$\frac{d}{dt}s_{1170} = v_{268} - v_{185} - v_{266} - v_{267} - v_{317} - 0.2158v_{399} \quad (1099)$$

8.287 Species s_1179

Name L-Threonine

SBO:0000247 simple chemical

Notes iJO1366:M_thr_DASH_L_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [r_0847](#), [r_0848](#), [r_1348](#), [r_2584](#) and as a product in [r_1349](#) and as a modifier in [r_0847](#), [r_0848](#), [r_1348](#), [r_1349](#), [r_2584](#)).

$$\frac{d}{dt}s_{1179} = v_{335} - v_{224} - v_{225} - v_{334} - 0.2537v_{399} \quad (1100)$$

8.288 Species s_1185

Name L-Tryptophan

SBO:0000247 simple chemical

Notes iJO1366:M_trp_DASH_L_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1368](#) and as a modifier in [r_1368](#), [r_2584](#)).

$$\frac{d}{dt}s_{1185} = v_{342} - 0.05684v_{399} \quad (1101)$$

8.289 Species s_1189

Name L-Tyrosine

SBO:0000247 simple chemical

Notes iJO1366:M_tyr_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_1375](#), [r_2584](#) and as a product in [r_1376](#) and as a modifier in [r_1375](#), [r_1376](#), [r_2584](#)).

$$\frac{d}{dt}s_{1189} = v_{344} - v_{343} - 0.1379v_{399} \quad (1102)$$

8.290 Species s_1193

Name L-Valine

SBO:0000247 simple chemical

Notes iJO1366:M_val_DASH_L_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1425](#) and as a modifier in [r_1425](#), [r_2584](#)).

$$\frac{d}{dt}s_{1193} = v_{363} - 0.4232v_{399} \quad (1103)$$

8.291 Species s_1204

Name Lipid A Disaccharide

SBO:0000247 simple chemical

Notes iJO1366:M_lipidAds_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1337](#) and as a product in [r_0857](#) and as a modifier in [r_0857](#), [r_1337](#)).

$$\frac{d}{dt}s_{1204} = v_{227} - v_{328} \quad (1104)$$

8.292 Species s_1211

Name LL-2,6-Diaminoheptanedioate

SBO:0000247 simple chemical

Notes iJO1366:M_26dap_DASH_LL_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0500](#) and as a product in [r_1316](#) and as a modifier in [r_0500](#), [r_1316](#)).

$$\frac{d}{dt}s_{1211} = v_{323} - v_{135} \quad (1105)$$

8.293 Species s_1212

Name magnesium

SBO:0000247 simple chemical

Notes iJO1366:M_mg2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1906](#) and as a modifier in [r_1906](#), [r_2584](#)).

$$\frac{d}{dt}s_{1212} = v_{379} - 0.008675v_{399} \quad (1106)$$

8.294 Species s_1214

Name magnesium

SBO:0000247 simple chemical

Notes iJO1366:M_mg2_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1906](#) and as a modifier in [r_1906](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1214} = 0 \quad (1107)$$

8.295 Species s_1216

Name Malonyl-[acyl-carrier protein]

SBO:0000247 simple chemical

Notes iJO1366:M_malACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in eight reactions (as a reactant in [r_0147](#), [r_0150](#), [r_0166](#) and as a product in [r_0935](#) and as a modifier in [r_0147](#), [r_0150](#), [r_0166](#), [r_0935](#)).

$$\frac{d}{dt}s_{1216} = v_{231} - v_{48} - v_{51} - v_{53} \quad (1108)$$

8.296 Species s_1217

Name Malonyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_malcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0934](#), [r_0935](#) and as a product in [r_0237](#) and as a modifier in [r_0237](#), [r_0934](#), [r_0935](#)).

$$\frac{d}{dt}s_{1217} = v_{77} - v_{230} - v_{231} \quad (1109)$$

8.297 Species s_1218

Name malonyl-CoA methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_malcoame_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0147](#) and as a product in [r_0934](#) and as a modifier in [r_0147](#), [r_0934](#)).

$$\frac{d}{dt}s_{1218} = v_{230} - v_{48} \quad (1110)$$

8.298 Species s_1239

Name Menaquinol 8

SBO:0000247 simple chemical

Notes iJO1366:M_mql8_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_1581](#) and as a product in [r_0512](#), [r_0735](#) and as a modifier in [r_0512](#), [r_0735](#), [r_1581](#)).

$$\frac{d}{dt}s_{1239} = v_{144} + v_{188} - v_{372} \quad (1111)$$

8.299 Species s_1240

Name Menaquinone 8

SBO:0000247 simple chemical

Notes iJO1366:M_mqn8_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0512](#), [r_0735](#) and as a product in [r_1581](#) and as a modifier in [r_0512](#), [r_0735](#), [r_1581](#)).

$$\frac{d}{dt}s_{1240} = v_{372} - v_{144} - v_{188} \quad (1112)$$

8.300 Species s_1242

Name meso-2,6-Diaminoheptanedioate

SBO:0000247 simple chemical

Notes iJO1366:M_26dap_DASH_M_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0499](#), [r_1400](#) and as a product in [r_0500](#) and as a modifier in [r_0499](#), [r_0500](#), [r_1400](#)).

$$\frac{d}{dt}s_{1242} = v_{135} - v_{134} - v_{354} \quad (1113)$$

8.301 Species s_1248

Name Methanol

SBO:0000247 simple chemical

Notes iJO1366:M_meoh_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1939](#) and as a product in [r_1220](#) and as a modifier in [r_1220](#), [r_1939](#)).

$$\frac{d}{dt}s_{1248} = v_{293} - v_{381} \quad (1114)$$

8.302 Species s_1250

Name Methanol

SBO:0000247 simple chemical

Notes iJO1366:M_meoh_e

Initial concentration $0 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a product in [r_1939](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1250} = 0 \quad (1115)$$

8.303 Species s_1255

Name Mn²⁺

SBO:0000247 simple chemical

Notes iJO1366:M_mn2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1923](#) and as a modifier in [r_1923](#), [r_2584](#)).

$$\frac{d}{dt}s_{1255} = v_{380} - 6.91 \cdot 10^{-4}v_{399} \quad (1116)$$

8.304 Species s_1257

Name Mn2+

SBO:0000247 simple chemical

Notes iJO1366:M_mn2_e

Initial concentration 1 mmol·l⁻¹

This species takes part in two reactions (as a reactant in [r_1923](#) and as a modifier in [r_1923](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1257} = 0 \quad (1117)$$

8.305 Species s_1258

Name MoaD Protein with bound AMP

SBO:0000247 simple chemical

Notes iJO1366:M_moadamp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0963](#) and as a product in [r_0969](#) and as a modifier in [r_0963](#), [r_0969](#)).

$$\frac{d}{dt}s_{1258} = v_{240} - v_{236} \quad (1118)$$

8.306 Species s_1259

Name MoaD Protein with carboxylate

SBO:0000247 simple chemical

Notes iJO1366:M_moadcoo_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0969](#) and as a product in [r_0968](#) and as a modifier in [r_0968](#), [r_0969](#)).

$$\frac{d}{dt}s_{1259} = 2v_{239} - v_{240} \quad (1119)$$

8.307 Species s_1260

Name MoaD Protein with thiocarboxylate

SBO:0000247 simple chemical

Notes iJO1366:M_moadcosh_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0968](#) and as a product in [r_0963](#) and as a modifier in [r_0963](#), [r_0968](#)).

$$\frac{d}{dt}s_{1260} = v_{236} - 2v_{239} \quad (1120)$$

8.308 Species s_1261

Name Molybdate

SBO:0000247 simple chemical

Notes iJO1366:M_mobd_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0964](#), [r_2584](#) and as a product in [r_1943](#) and as a modifier in [r_0964](#), [r_1943](#), [r_2584](#)).

$$\frac{d}{dt}s_{1261} = v_{382} - v_{237} - 7 \cdot 10^{-6}v_{399} \quad (1121)$$

8.309 Species s_1263

Name Molybdate

SBO:0000247 simple chemical

Notes iJO1366:M_mobd_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1943](#) and as a modifier in [r_1943](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1263} = 0 \quad (1122)$$

8.310 Species s_1264

Name molybdenum cofactor

SBO:0000247 simple chemical

Notes iJO1366:M_moco_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0384](#) and as a product in [r_0964](#) and as a modifier in [r_0384](#), [r_0964](#)).

$$\frac{d}{dt}s_{1264} = v_{237} - v_{114} \quad (1123)$$

8.311 Species s_1265

Name molybdopterin

SBO:0000247 simple chemical

Notes iJO1366:M_mpt_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0965](#) and as a product in [r_0968](#) and as a modifier in [r_0965](#), [r_0968](#)).

$$\frac{d}{dt}s_{1265} = v_{239} - v_{238} \quad (1124)$$

8.312 Species s_1274

Name N(omega)-(L-Arginino)succinate

SBO:0000247 simple chemical

Notes iJO1366:M_argsuc_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0360](#) and as a product in [r_0361](#) and as a modifier in [r_0360](#), [r_0361](#)).

$$\frac{d}{dt}s_{1274} = v_{105} - v_{104} \quad (1125)$$

8.313 Species s_1277

Name N-((R)-4-Phosphopantethenoyl)-L-cysteine

SBO:0000247 simple chemical

Notes iJO1366:M_4ppcys_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1201](#) and as a product in [r_1200](#) and as a modifier in [r_1200](#), [r_1201](#)).

$$\frac{d}{dt}s_{1277} = v_{277} - v_{278} \quad (1126)$$

8.314 Species s_1278

Name N-(5-Phospho-D-ribosyl)anthranilate

SBO:0000247 simple chemical

Notes iJO1366:M_pran_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1211](#) and as a product in [r_0348](#) and as a modifier in [r_0348](#), [r_1211](#)).

$$\frac{d}{dt}s_{1278} = v_{101} - v_{287} \quad (1127)$$

8.315 Species s_1287

Name N-Acetyl-D-glucosamine 1-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_acgam1p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1392](#) and as a product in [r_0658](#) and as a modifier in [r_0658](#), [r_1392](#)).

$$\frac{d}{dt}s_{1287} = v_{166} - v_{350} \quad (1128)$$

8.316 Species s_1302

Name N-Acetyl-L-glutamate

SBO:0000247 simple chemical

Notes iJO1366:M_acglu_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0243](#) and as a product in [r_0999](#) and as a modifier in [r_0243](#), [r_0999](#)).

$$\frac{d}{dt}s_{1302} = v_{243} - v_{78} \quad (1129)$$

8.317 Species s_1303

Name N-Acetyl-L-glutamate 5-semialdehyde

SBO:0000247 simple chemical

Notes iJO1366:M_acg5sa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0245](#) and as a product in [r_0996](#) and as a modifier in [r_0245](#), [r_0996](#)).

$$\frac{d}{dt}s_{1303} = v_{242} - v_{80} \quad (1130)$$

8.318 Species s_1304

Name N-Acetyl-L-glutamyl 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_acg5p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0996](#) and as a product in [r_0243](#) and as a modifier in [r_0243](#), [r_0996](#)).

$$\frac{d}{dt}s_{1304} = v_{78} - v_{242} \quad (1131)$$

8.319 Species s_1312

Name N-Carbamoyl-L-aspartate

SBO:0000247 simple chemical

Notes iJO1366:M_cbaspc

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0511](#) and as a product in [r_0368](#) and as a modifier in [r_0368](#), [r_0511](#)).

$$\frac{d}{dt}s_{1312} = v_{108} - v_{143} \quad (1132)$$

8.320 Species s_1315

Name N-Succinyl-2-L-amino-6-oxoheptanedioate

SBO:0000247 simple chemical

Notes iJO1366:M_sl2a6o_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1318](#) and as a product in [r_1338](#) and as a modifier in [r_1318](#), [r_1338](#)).

$$\frac{d}{dt}s_{1315} = v_{329} - v_{324} \quad (1133)$$

8.321 Species s_1316

Name N-Succinyl-LL-2,6-diaminoheptanedioate

SBO:0000247 simple chemical

Notes iJO1366:M_sl26da_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1316](#) and as a product in [r_1318](#) and as a modifier in [r_1316](#), [r_1318](#)).

$$\frac{d}{dt}s_{1316} = v_{324} - v_{323} \quad (1134)$$

8.322 Species s_1318

Name N1-(5-Phospho-D-ribosyl)glycinamide

SBO:0000247 simple chemical

Notes iJO1366:M_gar_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0648](#) and as a product in [r_1214](#) and as a modifier in [r_0648](#), [r_1214](#)).

$$\frac{d}{dt}s_{1318} = v_{289} - v_{164} \quad (1135)$$

8.323 Species s_1321

Name N2-Acetyl-L-ornithine

SBO:0000247 simple chemical

Notes iJO1366:M_acorn_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0244](#) and as a product in [r_0245](#) and as a modifier in [r_0244](#), [r_0245](#)).

$$\frac{d}{dt}s_{1321} = v_{80} - v_{79} \quad (1136)$$

8.324 Species s_1322

Name N2-Formyl-N1-(5-phospho-D-ribosyl)glycinamide

SBO:0000247 simple chemical

Notes iJO1366:M_fgam_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1212](#) and as a product in [r_0648](#) and as a modifier in [r_0648](#), [r_1212](#)).

$$\frac{d}{dt}s_{1322} = v_{164} - v_{288} \quad (1137)$$

8.325 Species s_1327

Name N6-(1,2-Dicarboxyethyl)-AMP

SBO:0000247 simple chemical

Notes iJO1366:M_dcamp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0304](#) and as a product in [r_0303](#) and as a modifier in [r_0303](#), [r_0304](#)).

$$\frac{d}{dt}s_{1327} = v_{97} - v_{98} \quad (1138)$$

8.326 Species s_1329

Name nickel

SBO:0000247 simple chemical

Notes iJO1366:M_ni2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1968](#) and as a modifier in [r_1968](#), [r_2584](#)).

$$\frac{d}{dt}s_{1329} = v_{385} - 3.23 \cdot 10^{-4}v_{399} \quad (1139)$$

8.327 Species s_1331

Name nickel

SBO:0000247 simple chemical

Notes iJO1366:M_ni2_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_1968](#) and as a modifier in [r_1968](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1331} = 0 \quad (1140)$$

8.328 Species s_1333

Name Nicotinamide adenine dinucleotide

SBO:0000247 simple chemical

Notes iJO1366:M_nad_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 70 reactions (as a reactant in r_0139, r_0179, r_0224, r_0573, r_-0574, r_0695, r_0731, r_0763, r_0787, r_0848, r_0925, r_1006, r_1151, r_1225, r_1245, r_1251, r_1306, r_2195, r_2519, r_2584 and as a product in r_0014, r_0015, r_0128, r_-0129, r_0130, r_0131, r_0133, r_0134, r_0135, r_0211, r_0576, r_0963, r_1008, r_1335, r_1962 and as a modifier in r_0014, r_0015, r_0128, r_0129, r_0130, r_0131, r_0133, r_-0134, r_0135, r_0139, r_0179, r_0211, r_0224, r_0573, r_0574, r_0576, r_0695, r_0731, r_0763, r_0787, r_0848, r_0925, r_0963, r_1006, r_1008, r_1151, r_1225, r_1245, r_1251, r_1306, r_1335, r_1962, r_2195, r_2519, r_2584).

$$\begin{aligned} \frac{d}{dt}s_{1333} = & v_7 + v_8 + v_{36} + v_{37} + v_{38} + v_{39} + v_{40} + v_{41} + v_{42} + v_{61} + v_{156} + v_{236} + v_{245} \\ & + v_{327} + v_{384} - v_{44} - v_{57} - v_{67} - v_{154} - v_{155} - v_{179} - v_{186} - 2v_{197} - v_{208} - v_{225} \\ & - v_{228} - v_{244} - v_{273} - v_{297} - v_{300} - v_{302} - v_{320} - v_{391} - v_{393} - 0.001831v_{399} \end{aligned} \quad (1141)$$

8.329 Species s_1334

Name Nicotinamide adenine dinucleotide - reduced

SBO:0000247 simple chemical

Notes iJO1366:M_nadh_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 64 reactions (as a reactant in r_0014, r_0015, r_0128, r_0129, r_-0130, r_0131, r_0133, r_0134, r_0135, r_0211, r_0576, r_0963, r_1335, r_1962 and as a product in r_0139, r_0179, r_0224, r_0573, r_0574, r_0695, r_0731, r_0763, r_0787, r_-0848, r_0925, r_1151, r_1225, r_1245, r_1251, r_1306, r_2195, r_2519 and as a modifier in r_0014, r_0015, r_0128, r_0129, r_0130, r_0131, r_0133, r_0134, r_0135, r_0139, r_0179, r_0211, r_0224, r_0573, r_0574, r_0576, r_0695, r_0731, r_0763, r_0787, r_0848, r_0925, r_0963, r_1151, r_1225, r_1245, r_1251, r_1306, r_1335, r_1962, r_2195, r_2519).

$$\begin{aligned} \frac{d}{dt}s_{1334} = & v_{44} + v_{57} + v_{67} + v_{154} + v_{155} + v_{179} + v_{186} + 2v_{197} + v_{208} + v_{225} \\ & + v_{228} + v_{273} + v_{297} + v_{300} + v_{302} + v_{320} + v_{391} + v_{393} - v_7 - v_8 - v_{36} \\ & - v_{37} - v_{38} - v_{39} - v_{40} - v_{41} - v_{42} - v_{61} - v_{156} - v_{236} - v_{327} - v_{384} \end{aligned} \quad (1142)$$

8.330 Species s_1335

Name Nicotinamide adenine dinucleotide phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_nadp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 64 reactions (as a reactant in r_0660, r_0806, r_0957, r_1962, r_2584 and as a product in r_0011, r_0063, r_0146, r_0149, r_0154, r_0212, r_0371, r_0502, r_0504, r_0563, r_0564, r_0675, r_0679, r_0686, r_0712, r_0769, r_0811, r_0812, r_0996, r_1006, r_1250, r_1304, r_1330, r_1346, r_1347, r_1375, r_1388 and as a modifier in r_0011, r_0063, r_0146, r_0149, r_0154, r_0212, r_0371, r_0502, r_0504, r_0563, r_0564, r_0660, r_0675, r_0679, r_0686, r_0712, r_0769, r_0806, r_0811, r_0812, r_0957, r_0996, r_1006, r_1250, r_1304, r_1330, r_1346, r_1347, r_1375, r_1388, r_1962, r_2584).

$$\begin{aligned} \frac{d}{dt}s_{1335} = & v_4 + v_{13} + v_{47} + v_{50} + v_{52} + v_{62} + v_{111} + v_{137} + v_{139} + v_{152} + v_{153} + v_{170} \\ & + v_{173} + v_{177} + v_{183} + v_{200} + v_{219} + v_{220} + v_{242} + v_{244} + v_{301} + v_{318} + 3v_{326} \\ & + v_{332} + v_{333} + v_{343} + v_{347} - v_{167} - v_{217} - v_{235} - v_{384} - 4.47 \cdot 10^{-4}v_{399} \end{aligned} \quad (1143)$$

8.331 Species s_1336

Name Nicotinamide adenine dinucleotide phosphate - reduced

SBO:0000247 simple chemical

Notes iJO1366:M_nadph_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 60 reactions (as a reactant in r_0011, r_0063, r_0146, r_0149, r_0154, r_0212, r_0371, r_0502, r_0504, r_0563, r_0564, r_0675, r_0679, r_0686, r_0712, r_0769, r_0811, r_0812, r_0996, r_1250, r_1304, r_1330, r_1346, r_1347, r_1375, r_1388 and as a product in r_0660, r_0806, r_0957, r_1962 and as a modifier in r_0011, r_0063, r_0146, r_0149, r_0154, r_0212, r_0371, r_0502, r_0504, r_0563, r_0564, r_0660, r_0675, r_0679, r_0686, r_0712, r_0769, r_0806, r_0811, r_0812, r_0957, r_0996, r_1250, r_1304, r_1330, r_1346, r_1347, r_1375, r_1388, r_1962).

$$\begin{aligned} \frac{d}{dt}s_{1336} = & v_{167} + v_{217} + v_{235} + v_{384} - v_4 - v_{13} - v_{47} - v_{50} - v_{52} - v_{62} - v_{111} \\ & - v_{137} - v_{139} - v_{152} - v_{153} - v_{170} - v_{173} - v_{177} - v_{183} - v_{200} - v_{219} \\ & - v_{220} - v_{242} - v_{301} - v_{318} - 3v_{326} - v_{332} - v_{333} - v_{343} - v_{347} \end{aligned} \quad (1144)$$

8.332 Species s_1340

Name Nicotinate D-ribonucleotide

SBO:0000247 simple chemical

Notes iJO1366:M_nicrnt_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1019](#) and as a product in [r_1021](#) and as a modifier in [r_1019](#), [r_1021](#)).

$$\frac{d}{dt}s_{1340} = v_{247} - v_{246} \quad (1145)$$

8.333 Species s_1358

Name O-Acetyl-L-serine

SBO:0000247 simple chemical

Notes iJO1366:M_acser_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0452](#) and as a product in [r_1301](#) and as a modifier in [r_0452](#), [r_1301](#)).

$$\frac{d}{dt}s_{1358} = v_{317} - v_{128} \quad (1146)$$

8.334 Species s_1362

Name O-Phospho-4-hydroxy-L-threonine

SBO:0000247 simple chemical

Notes iJO1366:M_phthr_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1245](#) and as a product in [r_1054](#) and as a modifier in [r_1054](#), [r_1245](#)).

$$\frac{d}{dt}s_{1362} = v_{253} - v_{300} \quad (1147)$$

8.335 Species s_1363

Name O-Phospho-L-homoserine

SBO:0000247 simple chemical

Notes iJO1366:M_phom_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1349](#) and as a product in [r_0770](#) and as a modifier in [r_0770](#), [r_1349](#)).

$$\frac{d}{dt}s_{1363} = v_{201} - v_{335} \quad (1148)$$

8.336 Species s_1364

Name O-Phospho-L-serine

SBO:0000247 simple chemical

Notes iJO1366:M_pser_DASH_L_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1134](#) and as a product in [r_1217](#) and as a modifier in [r_1134](#), [r_1217](#)).

$$\frac{d}{dt}s_{1364} = v_{291} - v_{268} \quad (1149)$$

8.337 Species s_1367

Name O-Succinyl-L-homoserine

SBO:0000247 simple chemical

Notes iJO1366:M_suchms_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1057](#) and as a product in [r_0771](#) and as a modifier in [r_0771](#), [r_1057](#)).

$$\frac{d}{dt}s_{1367} = v_{202} - v_{254} \quad (1150)$$

8.338 Species s_1372

Name O2

SBO:0000247 simple chemical

Notes iJO1366:M_o2_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in 14 reactions (as a reactant in r_0436, r_0829, r_1230, r_1581, r_1582 and as a product in r_0928, r_2002 and as a modifier in r_0436, r_0829, r_0928, r_1230, r_1581, r_1582, r_2002).

$$\frac{d}{dt}s_{1372} = v_{229} + v_{386} - v_{124} - v_{222} - 1.5v_{298} - 0.5v_{372} - 0.5v_{373} \quad (1151)$$

8.339 Species s_1374

Name O2

SBO:0000247 simple chemical

Notes iJO1366:M_o2_e

Initial concentration 1 mmol·l⁻¹

This species takes part in two reactions (as a reactant in r_2002 and as a modifier in r_2002), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1374} = 0 \quad (1152)$$

8.340 Species s_1390

Name Octanoyl-CoA (n-C8:0CoA)

SBO:0000247 simple chemical

Notes iJO1366:M_occoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in r_0235 and as a product in r_0272 and as a modifier in r_0235, r_0272).

$$\frac{d}{dt}s_{1390} = v_{91} - v_{75} \quad (1153)$$

8.341 Species s_1391

Name Ornithine

SBO:0000247 simple chemical

Notes iJO1366:M_orn_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1065](#) and as a product in [r_0244](#) and as a modifier in [r_0244](#), [r_1065](#)).

$$\frac{d}{dt}s_{1391} = v_{79} - v_{257} \quad (1154)$$

8.342 Species s_1394

Name Orotate

SBO:0000247 simple chemical

Notes iJO1366:M_orot_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1067](#) and as a product in [r_0501](#), [r_0512](#) and as a modifier in [r_0501](#), [r_0512](#), [r_1067](#)).

$$\frac{d}{dt}s_{1394} = v_{136} + v_{144} - v_{258} \quad (1155)$$

8.343 Species s_1397

Name Orotidine 5'-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_orot5p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1068](#) and as a product in [r_1067](#) and as a modifier in [r_1067](#), [r_1068](#)).

$$\frac{d}{dt}s_{1397} = v_{258} - v_{259} \quad (1156)$$

8.344 Species s_1399

Name Oxaloacetate

SBO:0000247 simple chemical

Notes iJO1366:M_oaa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in ten reactions (as a reactant in [r_0370](#), [r_0428](#), [r_0928](#) and as a product in [r_0925](#), [r_1141](#) and as a modifier in [r_0370](#), [r_0428](#), [r_0925](#), [r_0928](#), [r_1141](#)).

$$\frac{d}{dt}s_{1399} = v_{228} + v_{271} - v_{110} - v_{123} - v_{229} \quad (1157)$$

8.345 Species s_1406

Name Oxidized thioredoxin

SBO:0000247 simple chemical

Notes iJO1366:M_trdox_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1347](#) and as a product in [r_1139](#) and as a modifier in [r_1139](#), [r_1347](#)).

$$\frac{d}{dt}s_{1406} = v_{270} - v_{333} \quad (1158)$$

8.346 Species s_1407

Name p-Cresol

SBO:0000247 simple chemical

Notes iJO1366:M_4crsol_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_2537](#) and as a product in [r_1375](#) and as a modifier in [r_1375](#), [r_2537](#)).

$$\frac{d}{dt}s_{1407} = v_{343} - v_{397} \quad (1159)$$

8.347 Species s_1411

Name Palmitoyl-ACP (n-C16:0ACP)

SBO:0000247 simple chemical

Notes iJO1366:M_palmACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0013](#), [r_0706](#) and as a product in [r_0259](#) and as a modifier in [r_0013](#), [r_0259](#), [r_0706](#)).

$$\frac{d}{dt}s_{1411} = v_{84} - v_6 - v_{181} \quad (1160)$$

8.348 Species s_1412

Name Palmitoyl-CoA (n-C16:0CoA)

SBO:0000247 simple chemical

Notes iJO1366:M_pmtcoa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0580](#) and as a product in [r_0269](#) and as a modifier in [r_0269](#), [r_0580](#)).

$$\frac{d}{dt}s_{1412} = v_{89} - v_{158} \quad (1161)$$

8.349 Species s_1413

Name Pantetheine 4'-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_pan4p_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1074](#) and as a product in [r_1201](#) and as a modifier in [r_1074](#), [r_1201](#)).

$$\frac{d}{dt}s_{1413} = v_{278} - v_{260} \quad (1162)$$

8.350 Species s_1429

Name Phenylpyruvate

SBO:0000247 simple chemical

Notes iJO1366:M_phpyr_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1081](#) and as a product in [r_1224](#) and as a modifier in [r_1081](#), [r_1224](#)).

$$\frac{d}{dt}s_{1429} = v_{296} - v_{263} \quad (1163)$$

8.351 Species s_1430

Name Phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_pi_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 105 reactions (as a reactant in [r_0695](#), [r_1521](#) and as a product in [r_0085](#), [r_0099](#), [r_0100](#), [r_0101](#), [r_0106](#), [r_0175](#), [r_0237](#), [r_0303](#), [r_0368](#), [r_0371](#), [r_0425](#), [r_0440](#), [r_0463](#), [r_0489](#), [r_0505](#), [r_0622](#), [r_0648](#), [r_0679](#), [r_0683](#), [r_0764](#), [r_0951](#), [r_0996](#), [r_1047](#), [r_1065](#), [r_1134](#), [r_1141](#), [r_1206](#), [r_1208](#), [r_1210](#), [r_1212](#), [r_1214](#), [r_1218](#), [r_1222](#), [r_1232](#), [r_1245](#), [r_1259](#), [r_1265](#), [r_1315](#), [r_1329](#), [r_1349](#), [r_1389](#), [r_1397](#), [r_1399](#), [r_1400](#), [r_1401](#), [r_1413](#), [r_2011](#), [r_2195](#), [r_2310](#), [r_2521](#), [r_2584](#) and as a modifier in [r_0085](#), [r_0099](#), [r_0100](#), [r_0101](#), [r_0106](#), [r_0175](#), [r_0237](#), [r_0303](#), [r_0368](#), [r_0371](#), [r_0425](#), [r_0440](#), [r_0463](#), [r_0489](#), [r_0505](#), [r_0622](#), [r_0648](#), [r_0679](#), [r_0683](#), [r_0695](#), [r_0764](#), [r_0951](#), [r_0996](#), [r_1047](#), [r_1065](#), [r_1134](#), [r_1141](#), [r_1206](#), [r_1208](#), [r_1210](#), [r_1212](#), [r_1214](#), [r_1218](#), [r_1222](#), [r_1232](#), [r_1245](#), [r_1259](#), [r_1265](#), [r_1315](#), [r_1329](#), [r_1349](#), [r_1389](#), [r_1397](#), [r_1399](#), [r_1400](#), [r_1401](#), [r_1413](#), [r_1521](#), [r_2011](#), [r_2195](#), [r_2310](#), [r_2521](#)).

$$\begin{aligned} \frac{d}{dt}s_{1430} = & v_{18} + v_{22} + v_{23} + v_{24} + v_{28} + v_{54} + v_{77} + v_{97} + v_{108} + v_{111} + v_{122} + v_{125} + v_{130} + v_{132} + v_{140} \\ & + v_{162} + v_{164} + v_{173} + v_{175} + v_{198} + v_{233} + v_{242} + v_{252} + v_{257} + v_{268} + v_{271} + v_{282} + v_{284} \\ & + v_{286} + v_{288} + v_{289} + v_{292} + v_{294} + v_{299} + v_{300} + v_{305} + v_{307} + v_{322} + v_{325} + v_{335} + v_{348} \\ & + v_{352} + v_{353} + v_{354} + v_{355} + v_{359} + v_{387} + 2v_{391} + v_{392} + v_{394} + 53.95v_{399} - v_{179} - v_{366} \end{aligned} \quad (1164)$$

8.352 Species s_1432

Name Phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_pi_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_2011](#) and as a modifier in [r_2011](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1432} = 0 \quad (1165)$$

8.353 Species s_1435

Name phosphatidylethanolamine (dihexadec-9enoyl, n-C16:1)

SBO:0000247 simple chemical

Notes iJO1366:M_pe161_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1124](#) and as a modifier in [r_1124](#), [r_2584](#)).

$$\frac{d}{dt}s_{1435} = v_{265} - 0.07521v_{399} \quad (1166)$$

8.354 Species s_1437

Name phosphatidylethanolamine (dihexadecanoyl, n-C16:0)

SBO:0000247 simple chemical

Notes iJO1366:M_pe160_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1123](#) and as a modifier in [r_1123](#), [r_2584](#)).

$$\frac{d}{dt}s_{1437} = v_{264} - 0.06382v_{399} \quad (1167)$$

8.355 Species s_1476

Name phosphatidylserine (dihexadec-9-enoyl, n-C16:1)

SBO:0000247 simple chemical

Notes iJO1366:M_ps161_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in r_1124 and as a product in r_1131 and as a modifier in r_1124, r_1131).

$$\frac{d}{dt}s_{1476} = v_{267} - v_{265} \quad (1168)$$

8.356 Species s_1477

Name phosphatidylserine (dihexadecanoyl, n-C16:0)

SBO:0000247 simple chemical

Notes iJO1366:M_ps160_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in r_1123 and as a product in r_1130 and as a modifier in r_1123, r_1130).

$$\frac{d}{dt}s_{1477} = v_{266} - v_{264} \quad (1169)$$

8.357 Species s_1484

Name Phosphoenolpyruvate

SBO:0000247 simple chemical

Notes iJO1366:M_pep_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in 16 reactions (as a reactant in r_0100, r_0101, r_0175, r_1141, r_1389, r_1622, r_1714 and as a product in r_0538 and as a modifier in r_0100, r_0101, r_0175, r_0538, r_1141, r_1389, r_1622, r_1714).

$$\frac{d}{dt}s_{1484} = v_{151} - v_{23} - v_{24} - v_{54} - v_{271} - v_{348} - v_{375} - v_{376} \quad (1170)$$

8.358 Species s_1491

Name Pimeloyl-[acyl-carrier protein]

SBO:0000247 simple chemical

Notes iJO1366:M_pimACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0222](#) and as a product in [r_1220](#) and as a modifier in [r_0222](#), [r_1220](#)).

$$\frac{d}{dt}s_{1491} = v_{293} - v_{66} \quad (1171)$$

8.359 Species s_1492

Name Pimeloyl-[acyl-carrier protein] methyl ester

SBO:0000247 simple chemical

Notes iJO1366:M_pmeACP_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1220](#) and as a product in [r_0564](#) and as a modifier in [r_0564](#), [r_1220](#)).

$$\frac{d}{dt}s_{1492} = v_{153} - v_{293} \quad (1172)$$

8.360 Species s_1493

Name Porphobilinogen

SBO:0000247 simple chemical

Notes iJO1366:M_ppbng_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0777](#) and as a product in [r_1223](#) and as a modifier in [r_0777](#), [r_1223](#)).

$$\frac{d}{dt}s_{1493} = v_{295} - 4v_{204} \quad (1173)$$

8.361 Species s_1494

Name potassium

SBO:0000247 simple chemical

Notes iJO1366:M_k_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_2047](#) and as a modifier in [r_2047](#), [r_2584](#)).

$$\frac{d}{dt}s_{1494} = v_{388} - 0.1952v_{399} \quad (1174)$$

8.362 Species s_1496

Name potassium

SBO:0000247 simple chemical

Notes iJO1366:M_k_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_2047](#) and as a modifier in [r_2047](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1496} = 0 \quad (1175)$$

8.363 Species s_1497

Name Prephenate

SBO:0000247 simple chemical

Notes iJO1366:M_pphn_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1224](#), [r_1225](#) and as a product in [r_0423](#) and as a modifier in [r_0423](#), [r_1224](#), [r_1225](#)).

$$\frac{d}{dt}s_{1497} = v_{120} - v_{296} - v_{297} \quad (1176)$$

8.364 Species s_1508

Name Protoheme

SBO:0000247 simple chemical

Notes iJO1366:M_pheme_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0602](#) and as a modifier in [r_0602](#), [r_2584](#)).

$$\frac{d}{dt}s_{1508} = v_{160} - 2.23 \cdot 10^{-4}v_{399} \quad (1177)$$

8.365 Species s_1511

Name Protoporphyrin

SBO:0000247 simple chemical

Notes iJO1366:M_ppp9_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0602](#) and as a product in [r_1230](#) and as a modifier in [r_0602](#), [r_1230](#)).

$$\frac{d}{dt}s_{1511} = v_{298} - v_{160} \quad (1178)$$

8.366 Species s_1512

Name Protoporphyrinogen IX

SBO:0000247 simple chemical

Notes iJO1366:M_pppg9_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1230](#) and as a product in [r_0436](#) and as a modifier in [r_0436](#), [r_1230](#)).

$$\frac{d}{dt}s_{1512} = v_{124} - v_{298} \quad (1179)$$

8.367 Species s_1522

Name Pyridoxal 5'-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_pydx5p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_2519](#) and as a modifier in [r_2519](#), [r_2584](#)).

$$\frac{d}{dt}s_{1522} = v_{393} - 2.23 \cdot 10^{-4}v_{399} \quad (1180)$$

8.368 Species s_1530

Name Pyridoxine 5'-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_pdx5p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2519](#) and as a product in [r_1245](#) and as a modifier in [r_1245](#), [r_2519](#)).

$$\frac{d}{dt}s_{1530} = v_{300} - v_{393} \quad (1181)$$

8.369 Species s_1531

Name Pyruvate

SBO:0000247 simple chemical

Notes iJO1366:M_pyr_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 32 reactions (as a reactant in [r_0009](#), [r_0038](#), [r_0227](#), [r_0503](#), [r_0815](#), [r_1251](#), [r_1252](#), [r_1255](#), [r_1368](#) and as a product in [r_0056](#), [r_0182](#), [r_0349](#), [r_0424](#), [r_0450](#), [r_1622](#), [r_1714](#) and as a modifier in [r_0009](#), [r_0038](#), [r_0056](#), [r_0182](#), [r_0227](#), [r_0349](#), [r_0424](#), [r_0450](#), [r_0503](#), [r_0815](#), [r_1251](#), [r_1252](#), [r_1255](#), [r_1368](#), [r_1622](#), [r_1714](#)).

$$\begin{aligned} \frac{d}{dt}s_{1531} = & v_{12} + v_{59} + v_{102} + v_{121} + v_{127} + v_{375} + v_{376} - v_3 \\ & - v_9 - 2v_{69} - v_{138} - v_{221} - v_{302} - v_{303} - v_{304} - v_{342} \end{aligned} \quad (1182)$$

8.370 Species s_1537

Name Quinolinate

SBO:0000247 simple chemical

Notes iJO1366:M_quln_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1021](#) and as a product in [r_1259](#) and as a modifier in [r_1021](#), [r_1259](#)).

$$\frac{d}{dt}s_{1537} = v_{305} - v_{247} \quad (1183)$$

8.371 Species s_1544

Name Reduced thioredoxin

SBO:0000247 simple chemical

Notes iJO1366:M_trdrd_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1139](#) and as a product in [r_1347](#) and as a modifier in [r_1139](#), [r_1347](#)).

$$\frac{d}{dt}s_{1544} = v_{333} - v_{270} \quad (1184)$$

8.372 Species s_1546

Name Riboflavin

SBO:0000247 simple chemical

Notes iJO1366:M_ribflv_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1264](#), [r_2584](#) and as a product in [r_1266](#) and as a modifier in [r_1264](#), [r_1266](#), [r_2584](#)).

$$\frac{d}{dt}s_{1546} = v_{308} - v_{306} - 2.23 \cdot 10^{-4}v_{399} \quad (1185)$$

8.373 Species s_1550

Name S-Adenosyl-4-methylthio-2-oxobutanoate

SBO:0000247 simple chemical

Notes iJO1366:M_amob_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2538](#) and as a product in [r_0297](#) and as a modifier in [r_0297](#), [r_2538](#)).

$$\frac{d}{dt}s_{1550} = v_{94} - v_{398} \quad (1186)$$

8.374 Species s_1551

Name S-Adenosyl-L-homocysteine

SBO:0000247 simple chemical

Notes iJO1366:M_ahcys_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1288](#) and as a product in [r_0934](#), [r_1422](#) and as a modifier in [r_0934](#), [r_1288](#), [r_1422](#)).

$$\frac{d}{dt}s_{1551} = v_{230} + 2v_{361} - v_{315} \quad (1187)$$

8.375 Species s_1552

Name S-Adenosyl-L-methionine

SBO:0000247 simple chemical

Notes iJO1366:M_amet_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [r_0297](#), [r_0383](#), [r_0934](#), [r_1375](#), [r_1422](#), [r_2584](#) and as a product in [r_0951](#) and as a modifier in [r_0297](#), [r_0383](#), [r_0934](#), [r_0951](#), [r_1375](#), [r_1422](#), [r_2584](#)).

$$\frac{d}{dt}s_{1552} = v_{233} - v_{94} - v_{113} - v_{230} - v_{343} - 2v_{361} - 2.23 \cdot 10^{-4}v_{399} \quad (1188)$$

8.376 Species s_1558

Name S-Ribosyl-L-homocysteine

SBO:0000247 simple chemical

Notes iJO1366:M_rhcys_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1291](#) and as a product in [r_1288](#) and as a modifier in [r_1288](#), [r_1291](#)).

$$\frac{d}{dt}s_{1558} = v_{315} - v_{316} \quad (1189)$$

8.377 Species s_1561

Name Sedoheptulose 7-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_s7p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1357](#) and as a product in [r_1356](#) and as a modifier in [r_1356](#), [r_1357](#)).

$$\frac{d}{dt}s_{1561} = v_{337} - v_{338} \quad (1190)$$

8.378 Species s_1571

Name Shikimate

SBO:0000247 simple chemical

Notes iJO1366:M_skm_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1305](#) and as a product in [r_1304](#) and as a modifier in [r_1304](#), [r_1305](#)).

$$\frac{d}{dt}s_{1571} = v_{318} - v_{319} \quad (1191)$$

8.379 Species s_1574

Name Shikimate 5-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_skm5p_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0175](#) and as a product in [r_1305](#) and as a modifier in [r_0175](#), [r_1305](#)).

$$\frac{d}{dt}s_{1574} = v_{319} - v_{54} \quad (1192)$$

8.380 Species s_1577

Name Siroheme

SBO:0000247 simple chemical

Notes iJO1366:M_sheme_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1307](#) and as a modifier in [r_1307](#), [r_2584](#)).

$$\frac{d}{dt}s_{1577} = v_{321} - 2.23 \cdot 10^{-4}v_{399} \quad (1193)$$

8.381 Species s_1578

Name sirohydrochlorin

SBO:0000247 simple chemical

Notes iJO1366:M_scl_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1307](#) and as a product in [r_1306](#) and as a modifier in [r_1306](#), [r_1307](#)).

$$\frac{d}{dt}s_{1578} = v_{320} - v_{321} \quad (1194)$$

8.382 Species s_1595

Name Succinate

SBO:0000247 simple chemical

Notes iJO1366:M_succ_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1315](#) and as a product in [r_1057](#), [r_1316](#) and as a modifier in [r_1057](#), [r_1315](#), [r_1316](#)).

$$\frac{d}{dt}s_{1595} = v_{254} + v_{323} - v_{322} \quad (1195)$$

8.383 Species s_1599

Name Succinyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_succoa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_0771](#), [r_1338](#) and as a product in [r_1315](#) and as a modifier in [r_0771](#), [r_1315](#), [r_1338](#)).

$$\frac{d}{dt}s_{1599} = v_{322} - v_{202} - v_{329} \quad (1196)$$

8.384 Species s_1609

Name Sulfate

SBO:0000247 simple chemical

Notes iJO1366:M_so4_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1329](#), [r_2584](#) and as a product in [r_2108](#) and as a modifier in [r_1329](#), [r_2108](#), [r_2584](#)).

$$\frac{d}{dt}s_{1609} = v_{389} - v_{325} - 0.004338v_{399} \quad (1197)$$

8.385 Species s_1611

Name Sulfate

SBO:0000247 simple chemical

Notes iJO1366:M_so4_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_2108](#) and as a modifier in [r_2108](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1611} = 0 \quad (1198)$$

8.386 Species s_1612

Name Sulfite

SBO:0000247 simple chemical

Notes iJO1366:M_so3_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1330](#) and as a product in [r_1139](#) and as a modifier in [r_1139](#), [r_1330](#)).

$$\frac{d}{dt}s_{1612} = v_{270} - v_{326} \quad (1199)$$

8.387 Species s_1632

Name Tetradecanoyl-CoA (n-C14:0CoA)

SBO:0000247 simple chemical

Notes iJO1366:M_tdcoa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0236](#) and as a product in [r_0273](#) and as a modifier in [r_0236](#), [r_0273](#)).

$$\frac{d}{dt}s_{1632} = v_{92} - v_{76} \quad (1200)$$

8.388 Species s_1643

Name Thiamin monophosphate

SBO:0000247 simple chemical

Notes iJO1366:M_thmmp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1345](#) and as a product in [r_1344](#) and as a modifier in [r_1344](#), [r_1345](#)).

$$\frac{d}{dt}s_{1643} = v_{330} - v_{331} \quad (1201)$$

8.389 Species s_1644

Name Thiamine diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_thmpp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_1345](#) and as a modifier in [r_1345](#), [r_2584](#)).

$$\frac{d}{dt}s_{1644} = v_{331} - 2.23 \cdot 10^{-4}v_{399} \quad (1202)$$

8.390 Species s_1668

Name trans-Dec-2-enoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_dc2coa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0267](#) and as a product in [r_0121](#) and as a modifier in [r_0121](#), [r_0267](#)).

$$\frac{d}{dt}s_{1668} = v_{30} - v_{87} \quad (1203)$$

8.391 Species s_1670

Name trans-Dodec-2-enoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_dd2coa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0268](#) and as a product in [r_0122](#) and as a modifier in [r_0122](#), [r_0268](#)).

$$\frac{d}{dt}s_{1670} = v_{31} - v_{88} \quad (1204)$$

8.392 Species s_1672

Name trans-Hex-2-enoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_hx2coa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_0270](#) and as a product in [r_0124](#) and as a modifier in [r_0124](#), [r_0270](#)).

$$\frac{d}{dt}s_{1672} = v_{33} - v_{90} \quad (1205)$$

8.393 Species s_1674

Name trans-Hexadec-2-enoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_hdd2coa_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0096](#), [r_0269](#) and as a product in [r_0123](#) and as a modifier in [r_0096](#), [r_0123](#), [r_0269](#)).

$$\frac{d}{dt}s_{1674} = v_{32} - v_{20} - v_{89} \quad (1206)$$

8.394 Species s_1676

Name trans-Oct-2-enoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_oc2coa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0272](#) and as a product in [r_0126](#) and as a modifier in [r_0126](#), [r_0272](#)).

$$\frac{d}{dt}s_{1676} = v_{34} - v_{91} \quad (1207)$$

8.395 Species s_1680

Name trans-Tetradec-2-enoyl-CoA

SBO:0000247 simple chemical

Notes iJO1366:M_td2coa_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0273](#) and as a product in [r_0127](#) and as a modifier in [r_0127](#), [r_0273](#)).

$$\frac{d}{dt}s_{1680} = v_{35} - v_{92} \quad (1208)$$

8.396 Species s_1690

Name tRNA (Glu)

SBO:0000247 simple chemical

Notes iJO1366:M_trnaglu_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0687](#) and as a product in [r_0686](#) and as a modifier in [r_0686](#), [r_0687](#)).

$$\frac{d}{dt}s_{1690} = v_{177} - v_{178} \quad (1209)$$

8.397 Species s_1719

Name two disacharide linked murein units, pentapeptide crosslinked tetrapeptide (A2pm->D-ala) (middle of chain)

SBO:0000247 simple chemical

Notes iJO1366:M_murein5px4p_p

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_0970](#) and as a modifier in [r_0970](#), [r_2584](#)).

$$\frac{d}{dt}s_{1719} = v_{241} - 0.01389v_{399} \quad (1210)$$

8.398 Species s_1725

Name two linked disacharide pentapeptide murein units (uncrosslinked, middle of chain)

SBO:0000247 simple chemical

Notes iJO1366:M_murein5p5p_p

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0970](#) and as a product in [r_1944](#) and as a modifier in [r_0970](#), [r_1944](#)).

$$\frac{d}{dt}s_{1725} = v_{383} - v_{241} \quad (1211)$$

8.399 Species s_1731

Name Ubiquinol-8

SBO:0000247 simple chemical

Notes iJO1366:M_q8h2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a reactant in [r_1582](#) and as a product in [r_0501](#), [r_0734](#) and as a modifier in [r_0501](#), [r_0734](#), [r_1582](#)).

$$\frac{d}{dt}s_{1731} = v_{136} + v_{187} - v_{373} \quad (1212)$$

8.400 Species s_1732

Name Ubiquinone-8

SBO:0000247 simple chemical

Notes iJO1366:M_q8_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0501](#), [r_0734](#) and as a product in [r_1582](#) and as a modifier in [r_0501](#), [r_0734](#), [r_1582](#)).

$$\frac{d}{dt}s_{1732} = v_{373} - v_{136} - v_{187} \quad (1213)$$

8.401 Species s_1733

Name UDP

SBO:0000247 simple chemical

Notes iJO1366:M_udp_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in eight reactions (as a reactant in [r_1046](#) and as a product in [r_0857](#), [r_1393](#), [r_1409](#) and as a modifier in [r_0857](#), [r_1046](#), [r_1393](#), [r_1409](#)).

$$\frac{d}{dt}s_{1733} = v_{227} + v_{351} + v_{357} - v_{251} \quad (1214)$$

8.402 Species s_1734

Name UDP-2,3-bis(3-hydroxytetradecanoyl)glucosamine

SBO:0000247 simple chemical

Notes iJO1366:M_u23ga_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_0857](#), [r_1402](#) and as a product in [r_1378](#) and as a modifier in [r_0857](#), [r_1378](#), [r_1402](#)).

$$\frac{d}{dt}s_{1734} = v_{345} - v_{227} - v_{356} \quad (1215)$$

8.403 Species s_1735

Name UDP-3-O-(3-hydroxytetradecanoyl)-D-glucosamine

SBO:0000247 simple chemical

Notes iJO1366:M_u3hga_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1378](#) and as a product in [r_1379](#) and as a modifier in [r_1378](#), [r_1379](#)).

$$\frac{d}{dt}s_{1735} = v_{346} - v_{345} \quad (1216)$$

8.404 Species s_1736

Name UDP-3-O-(3-hydroxytetradecanoyl)-N-acetylglucosamine

SBO:0000247 simple chemical

Notes iJO1366:M_u3aga_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1379](#) and as a product in [r_1391](#) and as a modifier in [r_1379](#), [r_1391](#)).

$$\frac{d}{dt}s_{1736} = v_{349} - v_{346} \quad (1217)$$

8.405 Species s_1742

Name UDP-N-acetyl-3-O-(1-carboxyvinyl)-D-glucosamine

SBO:0000247 simple chemical

Notes iJO1366:M_uaccg_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1388](#) and as a product in [r_1389](#) and as a modifier in [r_1388](#), [r_1389](#)).

$$\frac{d}{dt}s_{1742} = v_{348} - v_{347} \quad (1218)$$

8.406 Species s_1745

Name UDP-N-acetyl-D-glucosamine

SBO:0000247 simple chemical

Notes iJO1366:M_uacgam_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in eight reactions (as a reactant in [r_1389](#), [r_1391](#), [r_1393](#) and as a product in [r_1392](#) and as a modifier in [r_1389](#), [r_1391](#), [r_1392](#), [r_1393](#)).

$$\frac{d}{dt}s_{1745} = v_{350} - v_{348} - v_{349} - v_{351} \quad (1219)$$

8.407 Species s_1750

Name UDP-N-acetylmuramate

SBO:0000247 simple chemical

Notes iJO1366:M_uamr_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1397](#) and as a product in [r_1388](#) and as a modifier in [r_1388](#), [r_1397](#)).

$$\frac{d}{dt}s_{1750} = v_{347} - v_{352} \quad (1220)$$

8.408 Species s_1751

Name UDP-N-acetylmuramoyl-L-alanine

SBO:0000247 simple chemical

Notes iJO1366:M_uama_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1399](#) and as a product in [r_1397](#) and as a modifier in [r_1397](#), [r_1399](#)).

$$\frac{d}{dt}s_{1751} = v_{352} - v_{353} \quad (1221)$$

8.409 Species s_1752

Name UDP-N-acetylmuramoyl-L-alanyl-D-gamma-glutamyl-meso-2,6-diaminopimelate

SBO:0000247 simple chemical

Notes iJO1366:M_ugmd_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1401](#) and as a product in [r_1400](#) and as a modifier in [r_1400](#), [r_1401](#)).

$$\frac{d}{dt}s_{1752} = v_{354} - v_{355} \quad (1222)$$

8.410 Species s_1754

Name UDP-N-acetylmuramoyl-L-alanyl-D-glutamate

SBO:0000247 simple chemical

Notes iJO1366:M_uamag_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1400](#) and as a product in [r_1399](#) and as a modifier in [r_1399](#), [r_1400](#)).

$$\frac{d}{dt}s_{1754} = v_{353} - v_{354} \quad (1223)$$

8.411 Species s_1755

Name UDP-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine

SBO:0000247 simple chemical

Notes iJO1366:M_ugmda_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1137](#) and as a product in [r_1401](#) and as a modifier in [r_1137](#), [r_1401](#)).

$$\frac{d}{dt}s_{1755} = v_{355} - v_{269} \quad (1224)$$

8.412 Species s_1762

Name UMP

SBO:0000247 simple chemical

Notes iJO1366:M_ump_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_1409](#) and as a product in [r_1068](#), [r_1137](#), [r_1402](#) and as a modifier in [r_1068](#), [r_1137](#), [r_1402](#), [r_1409](#)).

$$\frac{d}{dt}s_{1762} = v_{259} + v_{269} + v_{356} - v_{357} \quad (1225)$$

8.413 Species s_1765

Name Undecaprenyl diphosphate

SBO:0000247 simple chemical

Notes iJO1366:M_udcpdp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in eight reactions (as a reactant in [r_1413](#), [r_2584](#) and as a product in [r_1410](#), [r_1944](#) and as a modifier in [r_1410](#), [r_1413](#), [r_1944](#), [r_2584](#)).

$$\frac{d}{dt}s_{1765} = v_{358} + 2v_{383} - v_{359} - 5.5 \cdot 10^{-5}v_{399} \quad (1226)$$

8.414 Species s_1768

Name Undecaprenyl phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_udcpp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_1137](#) and as a product in [r_1413](#) and as a modifier in [r_1137](#), [r_1413](#)).

$$\frac{d}{dt}s_{1768} = v_{359} - v_{269} \quad (1227)$$

8.415 Species s_1776

Name Undecaprenyl-diphospho-N-acetylmuramoyl-(N-acetylglucosamine)-L-ala-D-glu-meso-2,6-diaminopimeloyl-D-ala-D-ala

SBO:0000247 simple chemical

Notes iJO1366:M_uaagmda_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1944](#) and as a product in [r_1393](#) and as a modifier in [r_1393](#), [r_1944](#)).

$$\frac{d}{dt}s_{1776} = v_{351} - 2v_{383} \quad (1228)$$

8.416 Species s_1777

Name Undecaprenyl-diphospho-N-acetylmuramoyl-L-alanyl-D-glutamyl-meso-2,6-diaminopimeloyl-D-alanyl-D-alanine

SBO:0000247 simple chemical

Notes iJO1366:M_uagmda_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in four reactions (as a reactant in [r_1393](#) and as a product in [r_1137](#) and as a modifier in [r_1137](#), [r_1393](#)).

$$\frac{d}{dt}s_{1777} = v_{269} - v_{351} \quad (1229)$$

8.417 Species s_1791

Name Uroporphyrinogen III

SBO:0000247 simple chemical

Notes iJO1366:M_uppg3_c

Initial concentration 0.1 mmol·l⁻¹

This species takes part in six reactions (as a reactant in [r_1421](#), [r_1422](#) and as a product in [r_1423](#) and as a modifier in [r_1421](#), [r_1422](#), [r_1423](#)).

$$\frac{d}{dt}s_{1791} = v_{362} - v_{360} - v_{361} \quad (1230)$$

8.418 Species s_1792

Name UTP

SBO:0000247 simple chemical

Notes iJO1366:M_utp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [r_0440](#), [r_1279](#), [r_1392](#), [r_2584](#) and as a product in [r_1046](#) and as a modifier in [r_0440](#), [r_1046](#), [r_1279](#), [r_1392](#), [r_2584](#)).

$$\frac{d}{dt}s_{1792} = v_{251} - v_{125} - v_{312} - v_{350} - 0.1441v_{399} \quad (1231)$$

8.419 Species s_1799

Name Xanthosine 5'-phosphate

SBO:0000247 simple chemical

Notes iJO1366:M_xmp_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_0741](#) and as a product in [r_0787](#) and as a modifier in [r_0741](#), [r_0787](#)).

$$\frac{d}{dt}s_{1799} = v_{208} - v_{190} \quad (1232)$$

8.420 Species s_1804

Name Zinc

SBO:0000247 simple chemical

Notes iJO1366:M_zn2_c

Initial concentration $0.1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in [r_2584](#) and as a product in [r_2167](#) and as a modifier in [r_2167](#), [r_2584](#)).

$$\frac{d}{dt}s_{1804} = v_{390} - 3.41 \cdot 10^{-4}v_{399} \quad (1233)$$

8.421 Species s_1806

Name Zinc

SBO:0000247 simple chemical

Notes iJO1366:M_zn2_e

Initial concentration $1 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in [r_2167](#) and as a modifier in [r_2167](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1806} = 0 \quad (1234)$$

8.422 Species s_1807

Name (2R,4S)-2-methyl-2,3,3,4-tetrahydroxytetrahydrofuran

SBO:0000247 simple chemical

Initial concentration $0 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a product in [r_2533](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1807} = 0 \quad (1235)$$

8.423 Species s_1835

Name 5'-deoxyribose

SBO:0000247 simple chemical

Initial concentration $0 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a product in [r_2534](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{1835} = 0 \quad (1236)$$

8.424 Species s_2072

Name p-Cresol

SBO:0000247 simple chemical

Initial concentration 0 mmol·l⁻¹

This species takes part in one reaction (as a product in [r_2537](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{2072} = 0 \quad (1237)$$

8.425 Species s_2093

Name S-Adenosyl-4-methylthio-2-oxobutanoate

SBO:0000247 simple chemical

Initial concentration 0 mmol·l⁻¹

This species takes part in one reaction (as a product in [r_2538](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}s_{2093} = 0 \quad (1238)$$

8.426 Species e_0001

Name thrA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in [r_0369](#), [r_0769](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0001} = 0 \quad (1239)$$

8.427 Species e_0002

Name thrB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0770](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0002} = 0 \quad (1240)$$

8.428 Species e_0003

Name thrC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1349](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0003} = 0 \quad (1241)$$

8.429 Species e_0005

Name talB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1356](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0005} = 0 \quad (1242)$$

8.430 Species e_0006

Name mog

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0965](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0006} = 0 \quad (1243)$$

8.431 Species e_0008

Name ribF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0611](#), [r_1264](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0008} = 0 \quad (1244)$$

8.432 Species e_0010

Name ispH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0014](#), [r_0015](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0010} = 0 \quad (1245)$$

8.433 Species e_0012

Name dapB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0502](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0012} = 0 \quad (1246)$$

8.434 Species e_0020

Name folA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0504](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0020} = 0 \quad (1247)$$

8.435 Species e_0022

Name pdxA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1245](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0022} = 0 \quad (1248)$$

8.436 Species e_0030

Name leuD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0066](#), [r_0138](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0030} = 0 \quad (1249)$$

8.437 Species e_0031

Name leuC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0066](#), [r_0138](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0031} = 0 \quad (1250)$$

8.438 Species e_0032

Name leuB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0139](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0032} = 0 \quad (1251)$$

8.439 Species e_0033

Name leuA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0067](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0033} = 0 \quad (1252)$$

8.440 Species e_0034

Name ilvI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0038](#), [r_0227](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0034} = 0 \quad (1253)$$

8.441 Species e_0035

Name ilvH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0038](#), [r_0227](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0035} = 0 \quad (1254)$$

8.442 Species e_0036

Name ftsI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0970](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0036} = 0 \quad (1255)$$

8.443 Species e_0037

Name murE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1400](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0037} = 0 \quad (1256)$$

8.444 Species e_0038

Name murF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1401](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0038} = 0 \quad (1257)$$

8.445 Species e_0039

Name mraY

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1137](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0039} = 0 \quad (1258)$$

8.446 Species e_0040

Name murD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1399](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0040} = 0 \quad (1259)$$

8.447 Species e_0041

Name murG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1393](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0041} = 0 \quad (1260)$$

8.448 Species e_0042

Name murC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1397](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0042} = 0 \quad (1261)$$

8.449 Species e_0043

Name ddlB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0463](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0043} = 0 \quad (1262)$$

8.450 Species e_0044

Name lpxC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1379](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0044} = 0 \quad (1263)$$

8.451 Species e_0045

Name mutT

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0510](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0045} = 0 \quad (1264)$$

8.452 Species e_0046

Name coaE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0488](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0046} = 0 \quad (1265)$$

8.453 Species e_0048

Name nadC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1021](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0048} = 0 \quad (1266)$$

8.454 Species e_0051

Name aceE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1251](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0051} = 0 \quad (1267)$$

8.455 Species e_0052

Name aceF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1251](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0052} = 0 \quad (1268)$$

8.456 Species e_0053

Name lpdA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1251](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0053} = 0 \quad (1269)$$

8.457 Species e_0054

Name acnB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0246](#), [r_0247](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0054} = 0 \quad (1270)$$

8.458 Species e_0060

Name can

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0755](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0060} = 0 \quad (1271)$$

8.459 Species e_0061

Name panD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0367](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0061} = 0 \quad (1272)$$

8.460 Species e_0062

Name panC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1076](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0062} = 0 \quad (1273)$$

8.461 Species e_0063

Name panB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0143](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0063} = 0 \quad (1274)$$

8.462 Species e_0064

Name folK

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0216](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0064} = 0 \quad (1275)$$

8.463 Species e_0065

Name mrcB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0970](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0065} = 0 \quad (1276)$$

8.464 Species e_0071

Name hemL

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0678](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0071} = 0 \quad (1277)$$

8.465 Species e_0074

Name mtnN

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0186](#), [r_1288](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0074} = 0 \quad (1278)$$

8.466 Species e_0076

Name dapD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1338](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0076} = 0 \quad (1279)$$

8.467 Species e_0077

Name pyrH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1409](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0077} = 0 \quad (1280)$$

8.468 Species e_0078

Name dxr

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0011](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0078} = 0 \quad (1281)$$

8.469 Species e_0079

Name uppS

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1410](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0079} = 0 \quad (1282)$$

8.470 Species e_0080

Name cdsA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0418](#), [r_0419](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0080} = 0 \quad (1283)$$

8.471 Species e_0081

Name lpxD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1378](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0081} = 0 \quad (1284)$$

8.472 Species e_0082

Name fabZ

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0145](#), [r_0148](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0082} = 0 \quad (1285)$$

8.473 Species e_0083

Name lpxA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1391](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0083} = 0 \quad (1286)$$

8.474 Species e_0084

Name lpxB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0857](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0084} = 0 \quad (1287)$$

8.475 Species e_0085

Name accA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0237](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0085} = 0 \quad (1288)$$

8.476 Species e_0094

Name fadE

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in seven reactions (as a modifier in [r_0266](#), [r_0267](#), [r_0268](#), [r_0269](#), [r_0270](#), [r_0272](#), [r_0273](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0094} = 0 \quad (1289)$$

8.477 Species e_0099

Name proB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0673](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0099} = 0 \quad (1290)$$

8.478 Species e_0100

Name proA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0679](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0100} = 0 \quad (1291)$$

8.479 Species e_0103

Name argF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1065](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0103} = 0 \quad (1292)$$

8.480 Species e_0110

Name yahI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0388](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0110} = 0 \quad (1293)$$

8.481 Species e_0116

Name cynT

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0755](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0116} = 0 \quad (1294)$$

8.482 Species e_0125

Name mhpF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0224](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0125} = 0 \quad (1295)$$

8.483 Species e_0134

Name hemB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1223](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0134} = 0 \quad (1296)$$

8.484 Species e_0135

Name ddlA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0463](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0135} = 0 \quad (1297)$$

8.485 Species e_0137

Name proC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1250](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0137} = 0 \quad (1298)$$

8.486 Species e_0138

Name aroL

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1305](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0138} = 0 \quad (1299)$$

8.487 Species e_0139

Name mak

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0761](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0139} = 0 \quad (1300)$$

8.488 Species e_0144

Name ribD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0212](#), [r_0498](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0144} = 0 \quad (1301)$$

8.489 Species e_0145

Name ribH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1266](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0145} = 0 \quad (1302)$$

8.490 Species e_0146

Name thiL

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1345](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0146} = 0 \quad (1303)$$

8.491 Species e_0149

Name dxs

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0009](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0149} = 0 \quad (1304)$$

8.492 Species e_0150

Name ispA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0522](#), [r_0655](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0150} = 0 \quad (1305)$$

8.493 Species e_0151

Name thiI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1346](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0151} = 0 \quad (1306)$$

8.494 Species e_0152

Name panE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0063](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0152} = 0 \quad (1307)$$

8.495 Species e_0162

Name tesB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a modifier in [r_0579](#), [r_0580](#), [r_0581](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0162} = 0 \quad (1308)$$

8.496 Species e_0167

Name adk

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a modifier in [r_0292](#), [r_0301](#), [r_1039](#), [r_1043](#), [r_1045](#), [r_1046](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0167} = 0 \quad (1309)$$

8.497 Species e_0168

Name hemH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0602](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0168} = 0 \quad (1310)$$

8.498 Species e_0175

Name gcl

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0739](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0175} = 0 \quad (1311)$$

8.499 Species e_0177

Name glxR

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1335](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0177} = 0 \quad (1312)$$

8.500 Species e_0183

Name arcC

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0388](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0183} = 0 \quad (1313)$$

8.501 Species e_0184

Name purK

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1206](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0184} = 0 \quad (1314)$$

8.502 Species e_0185

Name purE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1207](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0185} = 0 \quad (1315)$$

8.503 Species e_0186

Name lpxH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1402](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0186} = 0 \quad (1316)$$

8.504 Species e_0188

Name fold

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0950](#), [r_0957](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0188} = 0 \quad (1317)$$

8.505 Species e_0221

Name mrdA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0970](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0221} = 0 \quad (1318)$$

8.506 Species e_0223

Name nadD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1019](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0223} = 0 \quad (1319)$$

8.507 Species e_0225

Name hscC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1047](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0225} = 0 \quad (1320)$$

8.508 Species e_0238

Name fldA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in six reactions (as a modifier in [r_0084](#), [r_1255](#), [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0238} = 0 \quad (1321)$$

8.509 Species e_0246

Name gltA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0428](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0246} = 0 \quad (1322)$$

8.510 Species e_0253

Name sucC

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1315](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0253} = 0 \quad (1323)$$

8.511 Species e_0254

Name sucD

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1315](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0254} = 0 \quad (1324)$$

8.512 Species e_0260

Name nadA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1259](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0260} = 0 \quad (1325)$$

8.513 Species e_0263

Name aroG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0101](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0263} = 0 \quad (1326)$$

8.514 Species e_0264

Name gpmA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1153](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0264} = 0 \quad (1327)$$

8.515 Species e_0273

Name pgl

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0218](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0273} = 0 \quad (1328)$$

8.516 Species e_0274

Name bioA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0297](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0274} = 0 \quad (1329)$$

8.517 Species e_0275

Name bioB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0383](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0275} = 0 \quad (1330)$$

8.518 Species e_0276

Name bioF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0222](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0276} = 0 \quad (1331)$$

8.519 Species e_0277

Name bioC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0934](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0277} = 0 \quad (1332)$$

8.520 Species e_0278

Name bioD1

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0489](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0278} = 0 \quad (1333)$$

8.521 Species e_0279

Name moaA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0445](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0279} = 0 \quad (1334)$$

8.522 Species e_0280

Name moaC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0445](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0280} = 0 \quad (1335)$$

8.523 Species e_0281

Name moaD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0963](#), [r_0968](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0281} = 0 \quad (1336)$$

8.524 Species e_0282

Name moaE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0968](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0282} = 0 \quad (1337)$$

8.525 Species e_0291

Name moeB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0969](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0291} = 0 \quad (1338)$$

8.526 Species e_0292

Name moeA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0384](#), [r_0964](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0292} = 0 \quad (1339)$$

8.527 Species e_0300

Name ybjG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1413](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0300} = 0 \quad (1340)$$

8.528 Species e_0313

Name ltaE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1348](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0313} = 0 \quad (1341)$$

8.529 Species e_0318

Name trxB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1347](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0318} = 0 \quad (1342)$$

8.530 Species e_0323

Name pflA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1252](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0323} = 0 \quad (1343)$$

8.531 Species e_0324

Name pflB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1252](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0324} = 0 \quad (1344)$$

8.532 Species e_0326

Name serC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_1054](#), [r_1217](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0326} = 0 \quad (1345)$$

8.533 Species e_0327

Name aroA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0175](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0327} = 0 \quad (1346)$$

8.534 Species e_0328

Name cmk

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0457](#), [r_1409](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0328} = 0 \quad (1347)$$

8.535 Species e_0330

Name lpxK

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1337](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0330} = 0 \quad (1348)$$

8.536 Species e_0331

Name kdsB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0105](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0331} = 0 \quad (1349)$$

8.537 Species e_0332

Name aspC

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in three reactions (as a modifier in [r_0370](#), [r_1081](#), [r_1376](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0332} = 0 \quad (1350)$$

8.538 Species e_0342

Name pyrD

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in [r_0501](#), [r_0512](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0342} = 0 \quad (1351)$$

8.539 Species e_0368

Name pyrC

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0511](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0368} = 0 \quad (1352)$$

8.540 Species e_0372

Name fabH

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0147](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0372} = 0 \quad (1353)$$

[8.541 Species e_0373](#)

Name fabD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0935](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0373} = 0 \quad (1354)$$

[8.542 Species e_0374](#)

Name fabG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a modifier in [r_0146](#), [r_0149](#), [r_0154](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0374} = 0 \quad (1355)$$

[8.543 Species e_0375](#)

Name acpP

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in seven reactions (as a modifier in [r_0257](#), [r_0259](#), [r_0260](#), [r_0706](#), [r_0707](#), [r_0935](#), [r_1391](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0375} = 0 \quad (1356)$$

8.544 Species e_0376

Name fabF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0166](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0376} = 0 \quad (1357)$$

8.545 Species e_0377

Name pabC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0182](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0377} = 0 \quad (1358)$$

8.546 Species e_0378

Name tmk

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0532](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0378} = 0 \quad (1359)$$

8.547 Species e_0389

Name purB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0302](#), [r_0304](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0389} = 0 \quad (1360)$$

8.548 Species e_0391

Name icd

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0806](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0391} = 0 \quad (1361)$$

8.549 Species e_0395

Name dadX

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0310](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0395} = 0 \quad (1362)$$

8.550 Species e_0403

Name prs

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1215](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0403} = 0 \quad (1363)$$

8.551 Species e_0404

Name ispE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0178](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0404} = 0 \quad (1364)$$

8.552 Species e_0405

Name hemA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0686](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0405} = 0 \quad (1365)$$

8.553 Species e_0406

Name kdsA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0100](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0406} = 0 \quad (1366)$$

8.554 Species e_0416

Name adhE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0224](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0416} = 0 \quad (1367)$$

8.555 Species e_0425

Name trpA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1367](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0425} = 0 \quad (1368)$$

8.556 Species e_0426

Name trpB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1367](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0426} = 0 \quad (1369)$$

8.557 Species e_0427

Name trpC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0788](#), [r_1211](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0427} = 0 \quad (1370)$$

8.558 Species e_0428

Name trpD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0348](#), [r_0349](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0428} = 0 \quad (1371)$$

8.559 Species e_0429

Name trpE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0349](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0429} = 0 \quad (1372)$$

8.560 Species e_0431

Name acnA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0246](#), [r_0247](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0431} = 0 \quad (1373)$$

8.561 Species e_0432

Name ribA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0745](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0432} = 0 \quad (1374)$$

8.562 Species e_0433

Name pgpB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1413](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0433} = 0 \quad (1375)$$

8.563 Species e_0435

Name pyrF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1068](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0435} = 0 \quad (1376)$$

8.564 Species e_0436

Name fabI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0563](#), [r_0564](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0436} = 0 \quad (1377)$$

8.565 Species e_0439

Name puuA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0683](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0439} = 0 \quad (1378)$$

8.566 Species e_0451

Name ydbK

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1255](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0451} = 0 \quad (1379)$$

8.567 Species e_0466

Name aldA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0731](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0466} = 0 \quad (1380)$$

8.568 Species e_0514

Name folM

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0504](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0514} = 0 \quad (1381)$$

8.569 Species e_0515

Name fumC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0632](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0515} = 0 \quad (1382)$$

8.570 Species e_0516

Name fumA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0632](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0516} = 0 \quad (1383)$$

8.571 Species e_0519

Name malY

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0450](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0519} = 0 \quad (1384)$$

8.572 Species e_0531

Name ribE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1265](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0531} = 0 \quad (1385)$$

8.573 Species e_0540

Name ydiB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1304](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0540} = 0 \quad (1386)$$

8.574 Species e_0541

Name aroD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0098](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0541} = 0 \quad (1387)$$

8.575 Species e_0544

Name aroH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0101](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0544} = 0 \quad (1388)$$

8.576 Species e_0554

Name nadE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1008](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0554} = 0 \quad (1389)$$

8.577 Species e_0559

Name astC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0245](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0559} = 0 \quad (1390)$$

8.578 Species e_0561

Name gdhA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0675](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0561} = 0 \quad (1391)$$

8.579 Species e_0567

Name gapA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0574](#), [r_0695](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0567} = 0 \quad (1392)$$

8.580 Species e_0572

Name pabB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0181](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0572} = 0 \quad (1393)$$

8.581 Species e_0577

Name purT

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0225](#), [r_0648](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0577} = 0 \quad (1394)$$

8.582 Species e_0578

Name eda

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0056](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0578} = 0 \quad (1395)$$

8.583 Species e_0579

Name edd

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0217](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0579} = 0 \quad (1396)$$

8.584 Species e_0580

Name zwf

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0660](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0580} = 0 \quad (1397)$$

8.585 Species e_0586

Name nudB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0510](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0586} = 0 \quad (1398)$$

8.586 Species e_0605

Name hisG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0374](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0605} = 0 \quad (1399)$$

8.587 Species e_0606

Name hisD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0763](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0606} = 0 \quad (1400)$$

8.588 Species e_0607

Name hisC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0765](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0607} = 0 \quad (1401)$$

8.589 Species e_0608

Name hisB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0764](#), [r_0785](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0608} = 0 \quad (1402)$$

8.590 Species e_0609

Name hisH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0784](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0609} = 0 \quad (1403)$$

8.591 Species e_0610

Name hisA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0008](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0610} = 0 \quad (1404)$$

8.592 Species e_0611

Name hisF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0784](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0611} = 0 \quad (1405)$$

8.593 Species e_0612

Name hisI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_1204](#), [r_1205](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0612} = 0 \quad (1406)$$

8.594 Species e_0641

Name thiD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1198](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0641} = 0 \quad (1407)$$

8.595 Species e_0657

Name folE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0744](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0657} = 0 \quad (1408)$$

8.596 Species e_0682

Name atoB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0230](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0682} = 0 \quad (1409)$$

8.597 Species e_0691

Name nudI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0533](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0691} = 0 \quad (1410)$$

8.598 Species e_0717

Name yfbQ

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0815](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0717} = 0 \quad (1411)$$

8.599 Species e_0719

Name ackA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0225](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0719} = 0 \quad (1412)$$

8.600 Species e_0720

Name pta

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1218](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0720} = 0 \quad (1413)$$

8.601 Species e_0727

Name ubiX

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1064](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0727} = 0 \quad (1414)$$

8.602 Species e_0728

Name purF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0682](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0728} = 0 \quad (1415)$$

8.603 Species e_0729

Name folC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0505](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0729} = 0 \quad (1416)$$

8.604 Species e_0730

Name accD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0237](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0730} = 0 \quad (1417)$$

8.605 Species e_0731

Name pdxB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0573](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0731} = 0 \quad (1418)$$

8.606 Species e_0732

Name fabB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0150](#), [r_0166](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0732} = 0 \quad (1419)$$

8.607 Species e_0734

Name aroC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0425](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0734} = 0 \quad (1420)$$

8.608 Species e_0735

Name fadJ

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in 14 reactions (as a modifier in r_0120, r_0121, r_0122, r_0123, r_0124, r_0126, r_0127, r_0128, r_0129, r_0130, r_0131, r_0133, r_0134, r_0135), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0735} = 0 \quad (1421)$$

8.609 Species e_0736

Name fadI

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in seven reactions (as a modifier in r_0230, r_0231, r_0232, r_0233, r_0234, r_0235, r_0236), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0736} = 0 \quad (1422)$$

8.610 Species e_0742

Name yfdZ

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in r_0815), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0742} = 0 \quad (1423)$$

8.611 Species e_0743

Name glk

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0762](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0743} = 0 \quad (1424)$$

8.612 Species e_0746

Name gltX

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0687](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0746} = 0 \quad (1425)$$

8.613 Species e_0750

Name cysK

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0452](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0750} = 0 \quad (1426)$$

8.614 Species e_0757

Name cysM

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0452](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0757} = 0 \quad (1427)$$

8.615 Species e_0765

Name hemF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0436](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0765} = 0 \quad (1428)$$

8.616 Species e_0768

Name eutD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1218](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0768} = 0 \quad (1429)$$

8.617 Species e_0770

Name talA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1356](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0770} = 0 \quad (1430)$$

8.618 Species e_0771

Name tktB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_1357](#), [r_1358](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0771} = 0 \quad (1431)$$

8.619 Species e_0774

Name dapE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1316](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0774} = 0 \quad (1432)$$

8.620 Species e_0775

Name purC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1210](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0775} = 0 \quad (1433)$$

8.621 Species e_0776

Name dapA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0503](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0776} = 0 \quad (1434)$$

8.622 Species e_0791

Name purM

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1208](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0791} = 0 \quad (1435)$$

8.623 Species e_0793

Name ppk

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1222](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0793} = 0 \quad (1436)$$

8.624 Species e_0795

Name guaA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0741](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0795} = 0 \quad (1437)$$

8.625 Species e_0796

Name guaB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0787](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0796} = 0 \quad (1438)$$

8.626 Species e_0798

Name ispG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0084](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0798} = 0 \quad (1439)$$

8.627 Species e_0799

Name ndk

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in four reactions (as a modifier in [r_1039](#), [r_1043](#), [r_1045](#), [r_1046](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0799} = 0 \quad (1440)$$

8.628 Species e_0803

Name iscA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in [r_0799](#), [r_0801](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0803} = 0 \quad (1441)$$

8.629 Species e_0804

Name nifU

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in six reactions (as a modifier in [r_0796](#), [r_0797](#), [r_0798](#), [r_0799](#), [r_0800](#), [r_0801](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0804} = 0 \quad (1442)$$

8.630 Species e_0805

Name iscS

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in six reactions (as a modifier in [r_0796](#), [r_0797](#), [r_0798](#), [r_0802](#), [r_0963](#), [r_1346](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0805} = 0 \quad (1443)$$

8.631 Species [e_0813](#)

Name glyA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0726](#), [r_1348](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0813} = 0 \quad (1444)$$

8.632 Species [e_0815](#)

Name purL

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1212](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0815} = 0 \quad (1445)$$

8.633 Species [e_0818](#)

Name pdxJ

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1245](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-0818} = 0 \quad (1446)$$

8.634 Species e_0819

Name nadB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0829](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0819} = 0 \quad (1447)$$

8.635 Species e_0821

Name grcA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1252](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0821} = 0 \quad (1448)$$

8.636 Species e_0822

Name trxC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_1139](#), [r_1347](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0822} = 0 \quad (1449)$$

8.637 Species e_0823

Name pssA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_1130](#), [r_1131](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0823} = 0 \quad (1450)$$

8.638 Species e_0825

Name pheA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0423](#), [r_1224](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0825} = 0 \quad (1451)$$

8.639 Species e_0826

Name tyrA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0423](#), [r_1225](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0826} = 0 \quad (1452)$$

8.640 Species e_0827

Name aroF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0101](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0827} = 0 \quad (1453)$$

8.641 Species e_0828

Name ppnK

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1006](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0828} = 0 \quad (1454)$$

8.642 Species e_0839

Name luxS

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1291](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0839} = 0 \quad (1455)$$

8.643 Species e_0848

Name gutQ

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0355](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0848} = 0 \quad (1456)$$

8.644 Species e_0866

Name ispF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0053](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0866} = 0 \quad (1457)$$

8.645 Species e_0867

Name ispD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0054](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0867} = 0 \quad (1458)$$

8.646 Species e_0868

Name cysC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0305](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0868} = 0 \quad (1459)$$

8.647 Species e_0869

Name cysN

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1329](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0869} = 0 \quad (1460)$$

8.648 Species e_0870

Name cysD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1329](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0870} = 0 \quad (1461)$$

8.649 Species e_0871

Name cysH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1139](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0871} = 0 \quad (1462)$$

8.650 Species e_0872

Name cysI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1330](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0872} = 0 \quad (1463)$$

8.651 Species e_0873

Name cysJ

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1330](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0873} = 0 \quad (1464)$$

8.652 Species e_0875

Name eno

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0538](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0875} = 0 \quad (1465)$$

8.653 Species e_0876

Name pyrG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0440](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0876} = 0 \quad (1466)$$

8.654 Species e_0893

Name argA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0999](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0893} = 0 \quad (1467)$$

8.655 Species e_0894

Name thyA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1353](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0894} = 0 \quad (1468)$$

8.656 Species e_0896

Name aas

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a modifier in [r_0257](#), [r_0259](#), [r_0260](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0896} = 0 \quad (1469)$$

8.657 Species e_0897

Name lysA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0499](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0897} = 0 \quad (1470)$$

[8.658 Species e_0903](#)

Name yqeA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0388](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0903} = 0 \quad (1471)$$

[8.659 Species e_0911](#)

Name fldB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in six reactions (as a modifier in [r_0084](#), [r_1255](#), [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0911} = 0 \quad (1472)$$

[8.660 Species e_0918](#)

Name serA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1151](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-0918} = 0 \quad (1473)$$

8.661 Species e_0919

Name rpiA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1284](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0919} = 0 \quad (1474)$$

8.662 Species e_0925

Name pgk

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1152](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0925} = 0 \quad (1475)$$

8.663 Species e_0926

Name epd

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0574](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0926} = 0 \quad (1476)$$

8.664 Species e_0928

Name tktA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_1357](#), [r_1358](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0928} = 0 \quad (1477)$$

8.665 Species e_0931

Name metK

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0951](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0931} = 0 \quad (1478)$$

8.666 Species e_0941

Name glcD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0734](#), [r_0735](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0941} = 0 \quad (1479)$$

8.667 Species e_0951

Name metC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0450](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0951} = 0 \quad (1480)$$

8.668 Species e_0953

Name plsC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0012](#), [r_0013](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0953} = 0 \quad (1481)$$

8.669 Species e_0960

Name ribB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0092](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0960} = 0 \quad (1482)$$

8.670 Species e_0962

Name uppP

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1413](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0962} = 0 \quad (1483)$$

8.671 Species e_0964

Name folB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0507](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0964} = 0 \quad (1484)$$

8.672 Species e_0974

Name tdcE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1252](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0974} = 0 \quad (1485)$$

8.673 Species e_0975

Name tdcD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0225](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0975} = 0 \quad (1486)$$

8.674 Species e_0977

Name tdcB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0847](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0977} = 0 \quad (1487)$$

8.675 Species e_0978

Name garK

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0697](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0978} = 0 \quad (1488)$$

8.676 Species e_0979

Name garR

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1335](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0979} = 0 \quad (1489)$$

8.677 Species e_0986

Name argG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0361](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0986} = 0 \quad (1490)$$

8.678 Species e_0987

Name glmM

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1150](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0987} = 0 \quad (1491)$$

8.679 Species e_0988

Name folP

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0515](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0988} = 0 \quad (1492)$$

8.680 Species e_0990

Name ispB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1063](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{0990} = 0 \quad (1493)$$

8.681 Species e_0991

Name murA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1389](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0991} = 0 \quad (1494)$$

8.682 Species e_0993

Name kdsD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0355](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0993} = 0 \quad (1495)$$

8.683 Species e_0994

Name kdsC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0106](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{0994} = 0 \quad (1496)$$

8.684 Species e_1004

Name mdh

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0925](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1004} = 0 \quad (1497)$$

8.685 Species e_1005

Name accB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0237](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1005} = 0 \quad (1498)$$

8.686 Species e_1006

Name accC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0237](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1006} = 0 \quad (1499)$$

8.687 Species e_1010

Name aroE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1304](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1010} = 0 \quad (1500)$$

8.688 Species e_1014

Name argD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0245](#), [r_1318](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1014} = 0 \quad (1501)$$

8.689 Species e_1015

Name pabA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0181](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1015} = 0 \quad (1502)$$

8.690 Species e_1019

Name cysG

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in three reactions (as a modifier in [r_1306](#), [r_1307](#), [r_1422](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1019} = 0 \quad (1503)$$

8.691 Species e_1023

Name yhfW

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1202](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1023} = 0 \quad (1504)$$

8.692 Species e_1026

Name rpe

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1285](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1026} = 0 \quad (1505)$$

[8.693 Species e_1027](#)

Name aroB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0099](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1027} = 0 \quad (1506)$$

[8.694 Species e_1028](#)

Name aroK

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1305](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1028} = 0 \quad (1507)$$

[8.695 Species e_1029](#)

Name mrcA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0970](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1029} = 0 \quad (1508)$$

8.696 Species e_1034

Name bioH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1220](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1034} = 0 \quad (1509)$$

8.697 Species e_1045

Name asd

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0371](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1045} = 0 \quad (1510)$$

8.698 Species e_1086

Name xylA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1432](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1086} = 0 \quad (1511)$$

8.699 Species e_1105

Name cysE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1301](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1105} = 0 \quad (1512)$$

8.700 Species e_1106

Name gpsA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0712](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1106} = 0 \quad (1513)$$

8.701 Species e_1108

Name gpmI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1153](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1108} = 0 \quad (1514)$$

8.702 Species e_1109

Name tdh

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0848](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1109} = 0 \quad (1515)$$

8.703 Species e_1110

Name kbl

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0724](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1110} = 0 \quad (1516)$$

8.704 Species e_1125

Name waaA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0102](#), [r_0103](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1125} = 0 \quad (1517)$$

8.705 Species e_1126

Name coaD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1074](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1126} = 0 \quad (1518)$$

8.706 Species e_1127

Name coaBC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_1200](#), [r_1201](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1127} = 0 \quad (1519)$$

8.707 Species e_1128

Name dut

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0533](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1128} = 0 \quad (1520)$$

8.708 Species e_1129

Name pyrE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1067](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1129} = 0 \quad (1521)$$

8.709 Species e_1130

Name gmk

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0754](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1130} = 0 \quad (1522)$$

8.710 Species e_1136

Name ilvN

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0038](#), [r_0227](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1136} = 0 \quad (1523)$$

8.711 Species e_1137

Name ilvB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0038](#), [r_0227](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1137} = 0 \quad (1524)$$

8.712 Species e_1141

Name tnaA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1368](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1141} = 0 \quad (1525)$$

8.713 Species e_1149

Name glmS

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0684](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1149} = 0 \quad (1526)$$

8.714 Species e_1150

Name glmU

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0658](#), [r_1392](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1150} = 0 \quad (1527)$$

8.715 Species e_1160

Name asnA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0365](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1160} = 0 \quad (1528)$$

8.716 Species e_1167

Name ilvE

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in four reactions (as a modifier in [r_0808](#), [r_0854](#), [r_1081](#), [r_1425](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1167} = 0 \quad (1529)$$

8.717 Species e_1168

Name ilvD

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in [r_0517](#), [r_0518](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1168} = 0 \quad (1530)$$

8.718 Species e_1169

Name ilvA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0847](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1169} = 0 \quad (1531)$$

8.719 Species e_1170

Name ilvC

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in three reactions (as a modifier in [r_0063](#), [r_0811](#), [r_0812](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1170} = 0 \quad (1532)$$

[8.720 Species e_1172](#)

Name trxA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in [r_1139](#), [r_1347](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1172} = 0 \quad (1533)$$

[8.721 Species e_1184](#)

Name hemX

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1422](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1184} = 0 \quad (1534)$$

[8.722 Species e_1185](#)

Name hemD

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1423](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1185} = 0 \quad (1535)$$

8.723 Species e_1186

Name hemC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0777](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1186} = 0 \quad (1536)$$

8.724 Species e_1188

Name cyaY

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0797](#), [r_0798](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1188} = 0 \quad (1537)$$

8.725 Species e_1189

Name dapF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0500](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1189} = 0 \quad (1538)$$

8.726 Species e_1196

Name metE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0954](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1196} = 0 \quad (1539)$$

8.727 Species e_1200

Name ubiD

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1064](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1200} = 0 \quad (1540)$$

8.728 Species e_1201

Name fre

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0576](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1201} = 0 \quad (1541)$$

8.729 Species e_1202

Name fadA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in seven reactions (as a modifier in [r_0230](#), [r_0231](#), [r_0232](#), [r_0233](#), [r_0234](#), [r_0235](#), [r_0236](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1202} = 0 \quad (1542)$$

8.730 Species e_1203

Name fadB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in 15 reactions (as a modifier in r_0096, r_0120, r_0121, r_0122, r_0123, r_0124, r_0126, r_0127, r_0128, r_0129, r_0130, r_0131, r_0133, r_0134, r_0135), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1203} = 0 \quad (1543)$$

8.731 Species e_1205

Name hemG

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in r_1230), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1205} = 0 \quad (1544)$$

8.732 Species e_1206

Name mobB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in r_0385, r_0386), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1206} = 0 \quad (1545)$$

8.733 Species e_1207

Name mobA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in [r_0385](#), [r_0386](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1207} = 0 \quad (1546)$$

8.734 Species e_1210

Name glnA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0683](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1210} = 0 \quad (1547)$$

8.735 Species e_1226

Name tpiA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1363](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1226} = 0 \quad (1548)$$

8.736 Species e_1227

Name fpr

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in four reactions (as a modifier in [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1227} = 0 \quad (1549)$$

[8.737 Species e_1232](#)

Name metB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1057](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1232} = 0 \quad (1550)$$

[8.738 Species e_1233](#)

Name metL

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0369](#), [r_0769](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1233} = 0 \quad (1551)$$

[8.739 Species e_1234](#)

Name metF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0211](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1234} = 0 \quad (1552)$$

8.740 Species e_1238

Name pflD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1252](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1238} = 0 \quad (1553)$$

8.741 Species e_1239

Name pflC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1252](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1239} = 0 \quad (1554)$$

8.742 Species e_1240

Name ppc

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1141](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1240} = 0 \quad (1555)$$

8.743 Species e_1241

Name argE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0244](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1241} = 0 \quad (1556)$$

8.744 Species e_1242

Name argC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0996](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1242} = 0 \quad (1557)$$

8.745 Species e_1243

Name argB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0243](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1243} = 0 \quad (1558)$$

8.746 Species e_1244

Name argH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0360](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1244} = 0 \quad (1559)$$

8.747 Species e_1247

Name murI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0676](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1247} = 0 \quad (1560)$$

8.748 Species e_1248

Name murB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1388](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1248} = 0 \quad (1561)$$

8.749 Species e_1249

Name coaA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1075](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1249} = 0 \quad (1562)$$

8.750 Species e_1250

Name thiH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1346](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1250} = 0 \quad (1563)$$

8.751 Species e_1251

Name thiG

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1375](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1251} = 0 \quad (1564)$$

8.752 Species e_1252

Name thiF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1346](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1252} = 0 \quad (1565)$$

8.753 Species e_1253

Name thiE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1344](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1253} = 0 \quad (1566)$$

8.754 Species e_1254

Name thiC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0179](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1254} = 0 \quad (1567)$$

8.755 Species e_1256

Name hemE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1421](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1256} = 0 \quad (1568)$$

8.756 Species e_1257

Name purD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1214](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1257} = 0 \quad (1569)$$

8.757 Species e_1258

Name purH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0786](#), [r_1209](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1258} = 0 \quad (1570)$$

8.758 Species e_1259

Name metA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0771](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1259} = 0 \quad (1571)$$

8.759 Species e_1262

Name metH

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0954](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1262} = 0 \quad (1572)$$

8.760 Species e_1263

Name lysC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0369](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1263} = 0 \quad (1573)$$

8.761 Species e_1264

Name pgi

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0664](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1264} = 0 \quad (1574)$$

8.762 Species e_1271

Name ubiC

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0424](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1271} = 0 \quad (1575)$$

8.763 Species e_1272

Name ubiA

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0775](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1272} = 0 \quad (1576)$$

8.764 Species e_1273

Name plsB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in [r_0706](#), [r_0707](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1273} = 0 \quad (1577)$$

8.765 Species e_1275

Name alr

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0310](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1275} = 0 \quad (1578)$$

8.766 Species e_1276

Name tyrB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in three reactions (as a modifier in [r_0854](#), [r_1081](#), [r_1376](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1276} = 0 \quad (1579)$$

8.767 Species e_1277

Name aphA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1134](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1277} = 0 \quad (1580)$$

[8.768 Species e_1291](#)

Name rpiB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1284](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1291} = 0 \quad (1581)$$

[8.769 Species e_1298](#)

Name fumB

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0632](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1298} = 0 \quad (1582)$$

[8.770 Species e_1312](#)

Name psd

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in two reactions (as a modifier in [r_1123](#), [r_1124](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1312} = 0 \quad (1583)$$

8.771 Species e_1313

Name rsgA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_1047](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1313} = 0 \quad (1584)$$

8.772 Species e_1315

Name purA

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0303](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1315} = 0 \quad (1585)$$

8.773 Species e_1326

Name cysQ

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in one reaction (as a modifier in [r_0085](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{-1326} = 0 \quad (1586)$$

8.774 Species e_1334

Name nrdG

SBO:0000252 polypeptide chain

Initial concentration 0.0010 mmol·l⁻¹

This species takes part in four reactions (as a modifier in [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1334} = 0 \quad (1587)$$

[8.775 Species e_1335](#)

Name nrdD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a modifier in [r_1276](#), [r_1277](#), [r_1278](#), [r_1279](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1335} = 0 \quad (1588)$$

[8.776 Species e_1339](#)

Name pyrl

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0368](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1339} = 0 \quad (1589)$$

[8.777 Species e_1340](#)

Name pyrB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_0368](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{-1340} = 0 \quad (1590)$$

8.778 Species e_1341

Name argI

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1065](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1341} = 0 \quad (1591)$$

8.779 Species e_1355

Name sgcE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1285](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1355} = 0 \quad (1592)$$

8.780 Species e_1366

Name deoB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1202](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1366} = 0 \quad (1593)$$

8.781 Species e_1367

Name deoD

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1232](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1367} = 0 \quad (1594)$$

8.782 Species e_1369

Name serB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1134](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1369} = 0 \quad (1595)$$

8.783 Species e_1373

Name gpmB

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1153](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1373} = 0 \quad (1596)$$

8.784 Species e_1374

Name thiS

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in one reaction (as a modifier in [r_1346](#)), which does not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1374} = 0 \quad (1597)$$

8.785 Species e_1376

Name glcF

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0734](#), [r_0735](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt} e_{1376} = 0 \quad (1598)$$

8.786 Species e_1377

Name glcE

SBO:0000252 polypeptide chain

Initial concentration $0.0010 \text{ mmol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in [r_0734](#), [r_0735](#)), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{d}{dt}e_{1377} = 0 \quad (1599)$$

A Glossary of Systems Biology Ontology Terms

SBO:0000176 biochemical reaction: An event involving one or more chemical entities that modifies the electrochemical structure of at least one of the participants.

SBO:0000185 transport reaction: Movement of a physical entity without modification of the structure of the entity

SBO:0000247 simple chemical: Simple, non-repetitive chemical entity

SBO:0000252 polypeptide chain: Naturally occurring macromolecule formed by the repetition of amino-acid residues linked by peptidic bonds. A polypeptide chain is synthesized by the ribosome. CHEBI:1654

SBO:0000290 physical compartment: Specific location of space, that can be bounded or not. A physical compartment can have 1, 2 or 3 dimensions

SBO:0000460 enzymatic catalyst: A substance that accelerates the velocity of a chemical reaction without itself being consumed or transformed, by lowering the free energy of the transition state. The substance acting as a catalyst is an enzyme

SBML2^{LaTeX} was developed by Andreas Dräger^a, Hannes Planatscher^a, Dieudonné M Wouamba^a, Adrian Schröder^a, Michael Hucka^b, Lukas Endler^c, Martin Golebiewski^d and Andreas Zell^a. Please see <http://www.ra.cs.uni-tuebingen.de/software/SBML2LaTeX> for more information.

^aCenter for Bioinformatics Tübingen (ZBIT), Germany

^bCalifornia Institute of Technology, Beckman Institute BNMC, Pasadena, United States

^cEuropean Bioinformatics Institute, Wellcome Trust Genome Campus, Hinxton, United Kingdom

^dEML Research gGmbH, Heidelberg, Germany