SBML Model Report

Model name: “Sengupta2015 - Knowledge base model of human energy pool network (HEPNet)”

May 5, 2016

1 General Overview

This is a document in SBML Level 2 Version 4 format. This model was created by the following two authors: Vijayalakshmi Chelliah[1] and Abhishek Sengupta[2] at August seventh 2015 at 3:27 p. m. and last time modified at April eighth 2016 at 6:17 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	5
species types	0	species	240
events	0	constraints	0
reactions	175	function definitions	0
global parameters	0	unit definitions	5
rules	0	initial assignments	0

Model Notes

Sengupta2015 - Knowledge base model of humanenergy pool network (HEPNet)

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This model is described in the article:HEPNet: A Knowledge Base Model of Human Energy Pool Network for Predicting the Energy Availability Status of an Individual.Sengupta A, Grover M, Chakraborty A, Saxena S.PLoS ONE 2015; 10(6): e0127918

Abstract:

HEPNet is an electronic representation of metabolic reactions occurring within human cellular organization focusing on inflow and outflow of the energy currency ATP, GTP and other energy associated moieties. The backbone of HEPNet consists of primary bio-molecules such as carbohydrates, proteins and fats which ultimately constitute the chief source for the synthesis and obliteration of energy currencies in a cell. A series of biochemical pathways and reactions constituting the catabolism and anabolism of various metabolites are portrayed through cellular compartmentalization. The depicted pathways function synchronously toward an overarching goal of producing ATP and other energy associated moieties to bring into play a variety of cellular functions. HEPNet is manually curated with raw data from experiments and is also connected to KEGG and Reactome databases. This model has been validated by simulating it with physiological states like fasting, starvation, exercise and disease conditions like glycaemia, uremia and dihydrolipoamide dehydrogenase deficiency (DLDD). The results clearly indicate that ATP is the master regulator under different metabolic conditions and physiological states. The results also highlight that energy currencies play a minor role. However, the moiety creatine phosphate has a unique character, since it is a ready-made source of phosphoryl groups for the rapid synthesis of ATP from ADP. HEPNet provides a framework for further expanding the network diverse age groups of both the sexes, followed by the understanding of energetics in more complex metabolic pathways that are related to human disorders.

This model is hosted on BioModels Database and identified by: BIOMD0000000579.

To cite BioModels Database, please use: BioModels Database: An enhanced, curated and annotated resource for published quantitative kinetic models.

2 Unit Definitions

This is an overview of five unit definitions.

2.1 Unit `substance`

Name substance

Definition mol

2.2 Unit `volume`

Name volume

Definition l

2.3 Unit area

Name area

Definition m^2

2.4 Unit length

Name length

Definition m

2.5 Unit time

Name time

Definition s

3 Compartments

This model contains five compartments.

Table 2: Properties of all compartments.

Id	Name	SBO	Spatial Dimensions	Size	Unit	Constant	Outside
default			3	1	litre	☑	
c1	mitochondria		3	1	litre	☑	c2
c2	mit_inner_membrane		3	1	litre	☑	c3
c3	IMS		3	1	litre	☑	c4
c4	mit_outer_membrane		3	1	litre	☑	default

3.1 Compartment default

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

3.2 Compartment c1

This is a three dimensional compartment with a constant size of one litre, which is surrounded by c2 (mit_inner_membrane).

Name mitochondria

3.3 Compartment c2

This is a three dimensional compartment with a constant size of one litre, which is surrounded by c3 (IMS).

Name mit_inner_membrane

3.4 Compartment c3

This is a three dimensional compartment with a constant size of one litre, which is surrounded by c4 (mit_outer_membrane).

Name IMS

3.5 Compartment c4

This is a three dimensional compartment with a constant size of one litre, which is surrounded by default.

Name mit_outer_membrane

4 Species

This model contains 240 species. Section 6 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
s4	cis-Aconitate	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s136	car_mat	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s188	Xylulose5P	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s253	Unbranched alpha(1,4)polymer	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s49	UREA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s308	UDP-galactose1phosphate uridylyl transferase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s335	UDP-Glucose	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s13	UDP glucose4epimerase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s201	UDP Glucose Phosphorylase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s199	UDP	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s294	Triokinase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s292	Triglyceride	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s297	Trehalose	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s298	Trehalase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s337	Transketolase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s248	Transaldolase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s362	Thiolase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s94	TPP	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s284	Sucrose	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s283	Sucrase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s26	Succinate dehydrogenase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s7	Succinate	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s244	Sedoheptulase7P	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s58	S CoA synthase	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s6	S CoA	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s187	Ribose5P	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s388	QH2	c2	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s267	Q	c2	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s11	Pyruvate	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s44	Pi	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s344	Pi	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s193	Phosphopentose isomerase	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s79	Phosphohexo isomerase	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s249	Phosphogluco mutase	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s45	PYRUVATE KINASE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s91	PYRUVATE DEHYDROGENASE	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s90	PYRUVATE CARBOXYLASE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s200	PPi	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s363	PPi	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s36	PHOSPHO TRIOSE ISOMERASE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s43	PGA MUTASE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s86	PGA KINASE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s88	PEP CARBOXYKINASE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s10	PEP	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s34	Ornithine	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s81	OXALOACETATE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s50	OAA	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s190	NAPDH	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s185	NADPH	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s334	NADP+	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s67	NADH	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s351	NADH	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s381	NADH	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s93	NAD+	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s355	NAD+	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s333	Mg2+	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s357	Mg2+	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s28	Malate dehydrogenase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s9	Malate	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s252	Limit Dextrin	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s307	Lactose	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s189	Lactonase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s296	Lactate	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s95	LIPOATE	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s56	Isocitrate dehydrogenase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s52	Isocitrate	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s16	Hexokinase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s322	HMGCoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s327	HMG-CoA Synthase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s25	HCO3-+ NH4+	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s64	H2O	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s347	H2O	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s32	H20	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s329	H+	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s361	H+	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s255	Glygogen Phosphorylase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s250	Glycosyl-4,6-Transferase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s203	Glycosyl transferase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s251	Glycogen phosphorylase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s336	Glycogen Synthase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s197	Glycogen Primer	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s198	Glycogen	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s51	Glycerol3P	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s293	Glyceraldehyde	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s340	Glutamine	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s378	Glutamine	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s18	Glutaminase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s341	Glutamate	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s379	Glutamate	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s71	Glucose	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s302	Galactose1P	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s306	Galactose	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s305	Galactokinase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s48	GTP	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s241	GDP	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s352	GDP	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s35	GA3P	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s186	G6PDehydrogenase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s234	G6P	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s85	G3P DEHYDROGENASE	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s195	G1P	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s77	G-6-P Phosphatase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s40	Fumarate	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s27	Fumarase	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s286	Fructose	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s287	Fructokinase	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s374	FeS	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s377	FeS	c2	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s269	FMN	c2	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s353	FADH2	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s356	FAD	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s53	FA	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s3	F6P	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s285	F1P	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s73	F1,6P	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s31	F1,6BISPHOSPHATASE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s247	Erythrose4P	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s194	Epimerase	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s365	Enoyl-CoA hydratase	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s87	ENOLASE	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s82	DHAP	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s183	D-Ribulose5P	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s325	D-Beta-Hydroxybutyrate	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s330	D Betahydroxybutyrate dehydrogenase	c1	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s265	Cyb	c2	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s258	Cya-a3	c2	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s263	CyC2	c2	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s262	CyC	c2	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟
s238	CoA-SH	default	$\mathrm{mol}\cdot\mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s350	CoA-SH	c1	$mol \cdot l^{-1}$	⊟	⊟
s92	Co-Ash	c1	$mol \cdot l^{-1}$	⊟	⊟
s38	Citrullyl AMP intermediate	c1	$mol \cdot l^{-1}$	⊟	⊟
s342	Citrulline	c1	$mol \cdot l^{-1}$	⊟	⊟
s54	Citrate Synthase	c1	$mol \cdot l^{-1}$	⊟	⊟
s2	Citrate	c1	$mol \cdot l^{-1}$	⊟	⊟
s126	Carnitine_cyt	default	$mol \cdot l^{-1}$	⊟	⊟
s41	Carbamoyl phosphate synthetase I	c1	$mol \cdot l^{-1}$	⊟	⊟
s33	Carbamoyl phosphate	c1	$mol \cdot l^{-1}$	⊟	⊟
s237	CO2	default	$mol \cdot l^{-1}$	⊟	⊟
s349	CO2	c1	$mol \cdot l^{-1}$	⊟	⊟
s122	CAC	c2	$mol \cdot l^{-1}$	⊟	⊟
s109	C8Acyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s112	C8 L-3-hydroxyacyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s111	C8 Ketoacyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s113	C8 2-trans-enoyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s110	C6Acyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s115	C6 L-3-hydroxyacyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s116	C6 Ketoacyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s114	C6 2-trans-enoyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s117	C4Acyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s120	C4 L-3-hydroxyacyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s119	C4 Ketoacyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s121	C4 2-trans-enoyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟
s127	C22car_ims	c3	$mol \cdot l^{-1}$	⊟	⊟
s367	C22car_ims	c1	$mol \cdot l^{-1}$	⊟	⊟
s15	C22Acyl-CoA	c1	$mol \cdot l^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s22	C22 L-3-hydroxyacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s37	C22 Ketoacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s125	C22 AcylCoA_cyt	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s19	C22 2-trans-enoyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s129	C20car_ims	c3	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s371	C20car_ims	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s42	C20Acyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s68	C20 L-3-hydroxyacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s66	C20 Ketoacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s128	C20 AcylCoA_cyt	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s69	C20 2-trans-enoyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s131	C18car_ims	c3	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s370	C18car_ims	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s65	C18Acyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s72	C18 L-3-hydroxyacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s80	C18 Ketoacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s130	C18 AcylCoA_cyt	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s70	C18 2-trans-enoyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s133	C16car_ims	c3	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s369	C16car_ims	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s83	C16Acyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s96	C16 L-3-hydroxyacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s89	C16 Ketoacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s132	C16 AcylCoA_cyt	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s97	C16 2-trans-enoyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s135	C14car_ims	c3	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s368	C14car_ims	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s84	C14Acyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s99	C14 L-3-hydroxyacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s100	C14 Ketoacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s134	C14 AcylCoA_cyt	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s98	C14 2-trans-enoyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s101	C12Acyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s104	C12 L-3-hydroxyacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s103	C12 Ketoacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s105	C12 2-trans-enoyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s102	C10Acyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s107	C10 L-3-hydroxyacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s108	C10 Ketoacyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s106	C10 2-trans-enoyl-CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s366	Beta-hydroxyacyl-CoA dehydrogenase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s332	Beta-KetoacylCoA dehydrogenase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s24	Aspartate aminotransferase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s23	Aspartate	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s39	Arginosuccinate	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s343	Arginine	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s12	Amino acids	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s254	Alpha1,6-Glycosidase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s57	Alpha-KG dehydrgenase complex	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s5	Alpha-KG	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s17	Alpha keto acid	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s21	Alpha KG	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s291	Aldolase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s14	Alanine	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s364	Acyl-CoA dehydrogenase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s354	Aconitase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s326	AcetylCoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s324	Acetone	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s321	AcetoacetylCoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s328	Acetoacetate Decarboxylase	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s323	Acetoacetate	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s63	ATP	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s345	ATP	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s47	AMP	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s46	ADP	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s346	ADP	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s348	A CoA	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s192	6PGluconate dehydrogenase	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s182	6PGluconate	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s181	6PGDL	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s8	3-PGA	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s259	2e	c2	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s300	2NADH	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s301	2NAD+	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s358	2H+	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s389	2H+	c3	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s29	2ATP	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s30	2ADP	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s75	2-PGA	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s256	1/2O2	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s74	1,3-BiPGA	default	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s124	Creatine phosphate	c1	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s123	Creatine	c4	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
s400	Creatine Kinase	c3	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

5 Reactions

This model contains 175 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 4: Overview of all reactions

№	Id	Name	Reaction Equation	SBO
1	re99		$s11 \xrightarrow{s11} s14$	
2	re7		$s340 \xrightarrow{s340} s25$	
3	re8		$s341 \xrightarrow{s341} s25$	
4	re14		$s343 \xrightarrow{s343} s34$	
5	re37		$s73 \xrightleftharpoons{s73} s35$	
6	re11		$s342 + s345 \xrightarrow{s342,\ s345} s38 + s346$	
7	re12		$s38 + s23 + s345 \xrightarrow{s38,\ s23,\ s345} s39 + s47 + s363$	
8	re81		$s293 \xrightarrow{s293} s51$	
9	re85		$s296 + s67 \xrightarrow{s296,\ s67} s71 + s93$	
10	re27		$s3 + s63 \xrightarrow{s3,\ s63} s73 + s46$	
11	re36		$s8 + s63 \xrightarrow{s8,\ s63} s74 + s46$	
12	re40		$s35 + s44 + s93 \xrightarrow{s35,\ s44,\ s93} s74 + s67 + s329$	
13	re38		$s73 \xrightleftharpoons{s73} s82$	
14	re49		$s335 \xrightarrow{s335} s197$	
15	re68		$s262 \xrightarrow{s262} s258$	
16	re70		$s256 \xrightarrow{s256} s258$	

№	Id	Name	Reaction Equation	SBO
17	re71		$s347 \xrightarrow{s347} s258$	
18	re76		$s358 \xrightarrow{s358} s258$	
19	re63		$s374 \xrightarrow{s374} s259$	
20	re75		$s358 \xrightarrow{s358} s259$	
21	re67		$s263 \xrightarrow{s263} s262$	
22	re65		$s388 \xrightarrow{s388} s263$	
23	re61		$s388 \xrightarrow{s388} s265$	
24	re69		$s358 \xrightarrow{s358} s267$	
25	re59		$s377 + s353 \xrightarrow{s377,\ s353} s267 + s356$	
26	re77		$s381 \xrightarrow{s381} s269$	
27	re82		$s51 + s53 \xrightarrow{s51,\ s53} s292$	
28	re86		$s11 \xrightarrow{s11} s296$	
29	re90		$s307 \xrightarrow{s307} s306 + s71$	
30	re93		$s322 \xrightarrow{s322} s323 + s348$	
31	re1		$s378 \xrightarrow{s378} s340$	
32	re10		$s342 \xrightarrow{s342} s342$	
33	re9		$s34 + s33 \xrightarrow{s34,\ s33} s342 + s344$	
34	re24		$s39 \xrightarrow{s39} s343 + s40$	
35	re13		$s343 + s347 \xrightarrow{s343,\ s347} s343 + s49$	
36	re150		$s37 \xrightarrow{s37} s348$	
37	re151		$s66 \xrightarrow{s66} s348$	

№	Id	Name	Reaction Equation	SBO
38	re152		$\mathrm{s116} \xrightarrow{\mathrm{s116}} \mathrm{s348}$	
39	re153		$\mathrm{s80} \xrightarrow{\mathrm{s80}} \mathrm{s348}$	
40	re154		$\mathrm{s111} \xrightarrow{\mathrm{s111}} \mathrm{s348}$	
41	re155		$\mathrm{s108} \xrightarrow{\mathrm{s108}} \mathrm{s348}$	
42	re156		$\mathrm{s89} \xrightarrow{\mathrm{s89}} \mathrm{s348}$	
43	re157		$\mathrm{s100} \xrightarrow{\mathrm{s100}} \mathrm{s348}$	
44	re158		$\mathrm{s103} \xrightarrow{\mathrm{s103}} \mathrm{s348}$	
45	re100		$\mathrm{s353} \xrightarrow{\mathrm{s353}} \mathrm{s353}$	
46	re78		$\mathrm{s269} \xrightarrow{\mathrm{s269}} \mathrm{s355}$	
47	re104		$\mathrm{s355} \xrightarrow{\mathrm{s355}} \mathrm{s355}$	
48	re105		$\mathrm{s355} \xrightarrow{\mathrm{s355}} \mathrm{s355}$	
49	re106		$\mathrm{s355} \xrightarrow{\mathrm{s355}} \mathrm{s355}$	
50	re108		$\mathrm{s355} \xrightarrow{\mathrm{s355}} \mathrm{s355}$	
51	re107		$\mathrm{s356} \xrightarrow{\mathrm{s356}} \mathrm{s356}$	
52	re62		$\mathrm{s265} \xrightarrow{\mathrm{s265}} \mathrm{s374}$	
53	re58		$\mathrm{s269} \xrightarrow{\mathrm{s269}} \mathrm{s377}$	
54	re66		$\mathrm{s377} \xrightarrow{\mathrm{s377}} \mathrm{s377}$	
55	re5		$\mathrm{s14} + \mathrm{s21} \xrightarrow{\mathrm{s14,\ s21}} \mathrm{s379} + \mathrm{s17}$	
56	re2		$\mathrm{s12} + \mathrm{s17} \xrightarrow{\mathrm{s12,\ s17}} \mathrm{s379} + \mathrm{s21}$	
57	re101		$\mathrm{s351} \xrightarrow{\mathrm{s351}} \mathrm{s381}$	
58	re102		$\mathrm{s351} \xrightarrow{\mathrm{s351}} \mathrm{s381}$	

№	Id	Name	Reaction Equation	SBO
59	re103		$\mathrm{s351} \xrightarrow{\mathrm{s351}} \mathrm{s381}$	
60	re109		$\mathrm{s351} \xrightarrow{\mathrm{s351}} \mathrm{s381}$	
61	re60		$\mathrm{s267} \xrightarrow{\mathrm{s267}} \mathrm{s388}$	
62	re64		$\mathrm{s259} \xrightarrow{\mathrm{s259}} \mathrm{s388}$	
63	re72		$\mathrm{s269} \xrightarrow{\mathrm{s269}} \mathrm{s389}$	
64	re73		$\mathrm{s388} \xrightarrow{\mathrm{s388}} \mathrm{s389}$	
65	re74		$\mathrm{s388} \xrightarrow{\mathrm{s388}} \mathrm{s389}$	
66	re89		$\mathrm{s302} + \mathrm{s301} \xrightarrow{\mathrm{s13,\ s302}} \mathrm{s335} + \mathrm{s300} + \mathrm{s329}$	
67	re25		$\mathrm{s71} + \mathrm{s63} \xrightarrow{\mathrm{s16,\ s71}} \mathrm{s234} + \mathrm{s46}$	
68	re4		$\mathrm{s340} \xrightarrow{\mathrm{s18,\ s340}} \mathrm{s341}$	
69	re3		$\mathrm{s379} + \mathrm{s50} \xrightarrow{\mathrm{s24,\ s379,\ s50}} \mathrm{s341} + \mathrm{s23}$	
70	re20		$\mathrm{s7} + \mathrm{s356} \xrightleftharpoons{\mathrm{s26,\ s7}} \mathrm{s40} + \mathrm{s353}$	
71	re21		$\mathrm{s40} + \mathrm{s347} \xrightleftharpoons{\mathrm{s27,\ s40}} \mathrm{s9}$	
72	re22		$\mathrm{s9} + \mathrm{s355} \xrightleftharpoons{\mathrm{s28,\ s9}} \mathrm{s50} + \mathrm{s351} + \mathrm{s361}$	
73	re33		$\mathrm{s73} + \mathrm{s64} \xrightarrow{\mathrm{s31,\ s73}} \mathrm{s3} + \mathrm{s44}$	
74	re39		$\mathrm{s35} \xrightleftharpoons{\mathrm{s36,\ s35}} \mathrm{s82}$	
75	re6		$\mathrm{s25} + \mathrm{s29} \xrightarrow{\mathrm{s41,\ s25}} \mathrm{s33} + \mathrm{s30}$	
76	re29		$\mathrm{s8} \xrightleftharpoons{\mathrm{s43,\ s8}} \mathrm{s75}$	
77	re31		$\mathrm{s10} + \mathrm{s46} \xrightarrow{\mathrm{s45,\ s10}} \mathrm{s11} + \mathrm{s63}$	
78	re15		$\mathrm{s348} + \mathrm{s349} + \mathrm{s50} + \mathrm{s347} \xrightarrow{\mathrm{s54,\ s348}} \mathrm{s2} + \mathrm{s350}$	

№	Id	Name	Reaction Equation	SBO
79	re23		$s52 + s355 \xrightarrow{s56,\ s52} s5 + s349 + s351 + s361$	
80	re18		$s5 + s350 + s355 \xrightarrow{s57,\ s5} s6 + s349 + s351 + s361$	
81	re19		$s6 + s352 \xrightleftharpoons{s58,\ s6} s7 + s345 + s350$	
82	re32		$s234 + s32 \xrightarrow{s77,\ s234} s71 + s44$	
83	re26		$s234 \xrightleftharpoons{s79,\ s234} s3$	
84	re41		$s74 + s67 + s329 \xrightarrow{s85,\ s74} s35 + s44 + s93$	
85	re28		$s74 + s46 \xrightarrow{s86,\ s333,\ s74} s8 + s63$	
86	re30		$s75 \xrightarrow{s87,\ s75} s10$	
87	re35		$s81 + s241 \xrightarrow{s88,\ s81} s10 + s48$	
88	re34		$s11 + s63 \xrightarrow{s90,\ s11} s81 + s46$	
89	re42		$s11 + s94 + s92 + s355 + s356 + s95 \xrightarrow{s91,\ s357,\ s11} s348 + s351 + s361$	
90	re164		$s127 \xrightarrow{s122,\ s127} s367$	
91	re168		$s135 \xrightarrow{s122,\ s135} s368$	
92	re167		$s133 \xrightarrow{s122,\ s133} s369$	
93	re166		$s131 \xrightarrow{s122,\ s131} s370$	
94	re165		$s129 \xrightarrow{s122,\ s129} s371$	
95	re159		$s125 + s126 \xrightarrow{s123,\ s125,\ s126} s127 + s238$	
96	re160		$s128 + s126 \xrightarrow{s123,\ s128,\ s126} s129 + s238$	
97	re161		$s130 + s126 \xrightarrow{s123,\ s130,\ s126} s131 + s238$	

№	Id	Name	Reaction Equation	SBO
98	re162		$\mathrm{s132} + \mathrm{s126} \xrightarrow{\mathrm{s123,\ s132,\ s126}} \mathrm{s133} + \mathrm{s238}$	
99	re163		$\mathrm{s134} + \mathrm{s126} \xrightarrow{\mathrm{s123,\ s134,\ s126}} \mathrm{s135} + \mathrm{s238}$	
100	re169		$\mathrm{s367} \xrightarrow{\mathrm{s124,\ s367}} \mathrm{s15} + \mathrm{s136}$	
101	re170		$\mathrm{s371} \xrightarrow{\mathrm{s124,\ s371}} \mathrm{s42} + \mathrm{s136}$	
102	re171		$\mathrm{s370} \xrightarrow{\mathrm{s124,\ s370}} \mathrm{s65} + \mathrm{s136}$	
103	re172		$\mathrm{s369} \xrightarrow{\mathrm{s124,\ s369}} \mathrm{s83} + \mathrm{s136}$	
104	re173		$\mathrm{s368} \xrightarrow{\mathrm{s124,\ s368}} \mathrm{s84} + \mathrm{s136}$	
105	re43		$\mathrm{s234} + \mathrm{s334} \xrightarrow{\mathrm{s186,\ s333,\ s234}} \mathrm{s181} + \mathrm{s185}$	
106	re44		$\mathrm{s181} + \mathrm{s64} \xrightarrow{\mathrm{s189,\ s333,\ s181}} \mathrm{s182}$	
107	re45		$\mathrm{s182} + \mathrm{s334} \xrightarrow{\mathrm{s192,\ s182}} \mathrm{s183} + \mathrm{s190} + \mathrm{s329} + \mathrm{s237}$	
108	re46		$\mathrm{s183} \xrightleftharpoons{\mathrm{s193,\ s183}} \mathrm{s187}$	
109	re47		$\mathrm{s187} \xrightleftharpoons{\mathrm{s194,\ s187}} \mathrm{s188}$	
110	re48		$\mathrm{s195} + \mathrm{s199} \xrightarrow{\mathrm{s201,\ s195}} \mathrm{s335} + \mathrm{s200}$	
111	re53		$\mathrm{s35} + \mathrm{s244} \xrightarrow{\mathrm{s248,\ s35}} \mathrm{s3} + \mathrm{s247}$	
112	re54		$\mathrm{s234} \xrightarrow{\mathrm{s249,\ s234}} \mathrm{s195}$	
113	re55		$\mathrm{s198} \xrightarrow{\mathrm{s251,\ s198}} \mathrm{s195} + \mathrm{s252}$	
114	re56		$\mathrm{s252} \xrightarrow{\mathrm{s254,\ s252}} \mathrm{s253} + \mathrm{s71}$	
115	re57		$\mathrm{s253} + \mathrm{s63} \xrightarrow{\mathrm{s255,\ s253}} \mathrm{s195} + \mathrm{s46}$	
116	re80		$\mathrm{s284} + \mathrm{s64} \xrightarrow{\mathrm{s283,\ s284}} \mathrm{s71} + \mathrm{s286}$	
117	re79		$\mathrm{s286} + \mathrm{s63} \xrightarrow{\mathrm{s287,\ s286}} \mathrm{s285} + \mathrm{s46}$	

№	Id	Name	Reaction Equation	SBO
118	re83		$\mathrm{s285} \xrightarrow{\mathrm{s291,\ s285}} \mathrm{s82} + \mathrm{s293}$	
119	re84		$\mathrm{s293} + \mathrm{s63} \xrightarrow{\mathrm{s294,\ s293}} \mathrm{s35} + \mathrm{s46}$	
120	re87		$\mathrm{s297} + \mathrm{s64} \xrightarrow{\mathrm{s298,\ s297}} \mathrm{s71}$	
121	re88		$\mathrm{s306} + \mathrm{s63} \xrightarrow{\mathrm{s305,\ s333,\ s306}} \mathrm{s302} + \mathrm{s46}$	
122	re91		$\mathrm{s335} \xrightarrow{\mathrm{s308,\ s335}} \mathrm{s195}$	
123	re92		$\mathrm{s321} + \mathrm{s326} + \mathrm{s347} \xrightarrow{\mathrm{s327,\ s321}} \mathrm{s322} + \mathrm{s350}$	
124	re94		$\mathrm{s323} \xrightarrow{\mathrm{s328,\ s323}} \mathrm{s324} + \mathrm{s349}$	
125	re95		$\mathrm{s323} + \mathrm{s351} + \mathrm{s361} \xrightleftharpoons{\mathrm{s330,\ s323}} \mathrm{s325} + \mathrm{s355}$	
126	re98		$\mathrm{s323} + \mathrm{s6} \xrightarrow{\mathrm{s332,\ s323}} \mathrm{s321} + \mathrm{s7}$	
127	re50		$\mathrm{s197} \xrightarrow{\mathrm{s336,\ s203,\ s336,\ s250,\ s197}} \mathrm{s198}$	
128	re52		$\mathrm{s188} + \mathrm{s247} \xrightarrow{\mathrm{s337,\ s188}} \mathrm{s3} + \mathrm{s35}$	
129	re51		$\mathrm{s188} + \mathrm{s187} \xrightarrow{\mathrm{s337,\ s188}} \mathrm{s35} + \mathrm{s244}$	
130	re16		$\mathrm{s2} \xrightleftharpoons{\mathrm{s354,\ s2}} \mathrm{s4} + \mathrm{s347}$	
131	re17		$\mathrm{s4} + \mathrm{s347} \xrightleftharpoons{\mathrm{s354,\ s4}} \mathrm{s52}$	
132	re113		$\mathrm{s37} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s37}} \mathrm{s42}$	
133	re116		$\mathrm{s66} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s66}} \mathrm{s65}$	
134	re120		$\mathrm{s80} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s80}} \mathrm{s83}$	
135	re123		$\mathrm{s89} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s89}} \mathrm{s84}$	
136	re128		$\mathrm{s100} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s100}} \mathrm{s101}$	
137	re131		$\mathrm{s103} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s103}} \mathrm{s102}$	

№	Id	Name	Reaction Equation	SBO
138	re135		$\mathrm{s108} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s108}} \mathrm{s109}$	
139	re138		$\mathrm{s111} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s111}} \mathrm{s110}$	
140	re144		$\mathrm{s116} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s116}} \mathrm{s117}$	
141	re97		$\mathrm{s348} \xrightarrow{\mathrm{s362,\ s348}} \mathrm{s321} + \mathrm{s350}$	
142	re96		$\mathrm{s321} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s321}} \mathrm{s348}$	
143	re147		$\mathrm{s119} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s119}} \mathrm{s348}$	
144	re110		$\mathrm{s15} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s15}} \mathrm{s19} + \mathrm{s353}$	
145	re117		$\mathrm{s42} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s42}} \mathrm{s69} + \mathrm{s353}$	
146	re125		$\mathrm{s65} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s65}} \mathrm{s70} + \mathrm{s353}$	
147	re124		$\mathrm{s83} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s83}} \mathrm{s97} + \mathrm{s353}$	
148	re141		$\mathrm{s84} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s84}} \mathrm{s98} + \mathrm{s353}$	
149	re132		$\mathrm{s101} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s101}} \mathrm{s105} + \mathrm{s353}$	
150	re140		$\mathrm{s102} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s102}} \mathrm{s106} + \mathrm{s353}$	
151	re139		$\mathrm{s109} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s109}} \mathrm{s113} + \mathrm{s353}$	
152	re149		$\mathrm{s110} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s110}} \mathrm{s114} + \mathrm{s353}$	
153	re148		$\mathrm{s117} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s117}} \mathrm{s121} + \mathrm{s353}$	
154	re111		$\mathrm{s19} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s19}} \mathrm{s22}$	
155	re114		$\mathrm{s69} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s69}} \mathrm{s68}$	
156	re118		$\mathrm{s70} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s70}} \mathrm{s72}$	
157	re121		$\mathrm{s97} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s97}} \mathrm{s96}$	

№	Id	Name	Reaction Equation	SBO
158	re126		$\mathrm{s98} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s98}} \mathrm{s99}$	
159	re129		$\mathrm{s105} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s105}} \mathrm{s104}$	
160	re133		$\mathrm{s106} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s106}} \mathrm{s107}$	
161	re136		$\mathrm{s113} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s113}} \mathrm{s112}$	
162	re142		$\mathrm{s114} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s114}} \mathrm{s115}$	
163	re145		$\mathrm{s121} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s121}} \mathrm{s120}$	
164	re112		$\mathrm{s22} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s22}} \mathrm{s37} + \mathrm{s351} + \mathrm{s361}$	
165	re115		$\mathrm{s68} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s68}} \mathrm{s66} + \mathrm{s351} + \mathrm{s361}$	
166	re119		$\mathrm{s72} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s72}} \mathrm{s80} + \mathrm{s351} + \mathrm{s361}$	
167	re122		$\mathrm{s96} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s96}} \mathrm{s89} + \mathrm{s351} + \mathrm{s361}$	
168	re127		$\mathrm{s99} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s99}} \mathrm{s100} + \mathrm{s351} + \mathrm{s361}$	
169	re130		$\mathrm{s104} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s104}} \mathrm{s103} + \mathrm{s351} + \mathrm{s361}$	
170	re134		$\mathrm{s107} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s107}} \mathrm{s108} + \mathrm{s351} + \mathrm{s361}$	
171	re137		$\mathrm{s112} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s112}} \mathrm{s111} + \mathrm{s351} + \mathrm{s361}$	
172	re143		$\mathrm{s115} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s115}} \mathrm{s116} + \mathrm{s351} + \mathrm{s361}$	
173	re146		$\mathrm{s120} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s120}} \mathrm{s119} + \mathrm{s351} + \mathrm{s361}$	
174	re175		$\mathrm{s124} + \mathrm{s345} \xrightarrow{\mathrm{s400,\ s124}} \mathrm{s123}$	
175	re182		$\mathrm{s123} \xrightarrow{\mathrm{s123}} \mathrm{s124} + \mathrm{s47}$	

5.1 Reaction re99

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s11} \xrightarrow{\mathrm{s11}} \mathrm{s14} \tag{1}$$

Reactant

Table 5: Properties of each reactant.

Id	Name	SBO
s11	Pyruvate	

Modifier

Table 6: Properties of each modifier.

Id	Name	SBO
s11	Pyruvate	

Product

Table 7: Properties of each product.

Id	Name	SBO
s14	Alanine	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_1 = [\mathrm{s11}] \cdot \mathrm{k1} \tag{2}$$

Table 8: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.2 Reaction re7

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s340} \xrightarrow{\text{s340}} \text{s25} \tag{3}$$

Reactant

Table 9: Properties of each reactant.

Id	Name	SBO
s340	Glutamine	

Modifier

Table 10: Properties of each modifier.

Id	Name	SBO
s340	Glutamine	

Product

Table 11: Properties of each product.

Id	Name	SBO
s25	HCO3-+ NH4+	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_2 = [\text{s340}] \cdot \text{k1} \tag{4}$$

Table 12: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.3 Reaction re8

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s341} \xrightarrow{\text{s341}} \text{s25} \tag{5}$$

Reactant

Table 13: Properties of each reactant.

Id	Name	SBO
s341	Glutamate	

Modifier

Table 14: Properties of each modifier.

Id	Name	SBO
s341	Glutamate	

Product

Table 15: Properties of each product.

Id	Name	SBO
s25	HCO3-+ NH4+	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_3 = [\text{s341}] \cdot \text{k1} \tag{6}$$

Table 16: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.4 Reaction re14

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s343} \xrightarrow{\mathrm{s343}} \mathrm{s34} \tag{7}$$

Reactant

Table 17: Properties of each reactant.

Id	Name	SBO
s343	Arginine	

Modifier

Table 18: Properties of each modifier.

Id	Name	SBO
s343	Arginine	

Product

Table 19: Properties of each product.

Id	Name	SBO
s34	Ornithine	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_4 = [\mathrm{s343}] \cdot \mathrm{k1} \tag{8}$$

Table 20: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.5 Reaction re37

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

Reaction equation

$$\mathrm{s73} \overset{\mathrm{s73}}{\rightleftharpoons} \mathrm{s35} \tag{9}$$

Reactant

Table 21: Properties of each reactant.

Id	Name	SBO
s73	F1,6P	

Modifier

Table 22: Properties of each modifier.

Id	Name	SBO
s73	F1,6P	

Product

Table 23: Properties of each product.

Id	Name	SBO
s35	GA3P	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_5 = [\mathrm{s73}] \cdot \mathrm{k1} \tag{10}$$

Table 24: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.6 Reaction re11

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\text{s342} + \text{s345} \xrightarrow{\text{s342, s345}} \text{s38} + \text{s346} \tag{11}$$

Reactants

Table 25: Properties of each reactant.

Id	Name	SBO
s342	Citrulline	
s345	ATP	

Modifiers

Table 26: Properties of each modifier.

Id	Name	SBO
s342	Citrulline	
s345	ATP	

Products

Table 27: Properties of each product.

Id	Name	SBO
s38	Citrullyl AMP intermediate	
s346	ADP	

Kinetic Law

Derived unit $\text{mol}^3 \cdot \text{l}^{-2}$

$$v_6 = [\text{s342}] \cdot [\text{s345}] \cdot \text{k1} \tag{12}$$

Table 28: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.7 Reaction re12

This is an irreversible reaction of three reactants forming three products influenced by three modifiers.

Reaction equation

$$\mathrm{s38} + \mathrm{s23} + \mathrm{s345} \xrightarrow{\mathrm{s38,\ s23,\ s345}} \mathrm{s39} + \mathrm{s47} + \mathrm{s363} \tag{13}$$

Reactants

Table 29: Properties of each reactant.

Id	Name	SBO
s38	Citrullyl AMP intermediate	
s23	Aspartate	
s345	ATP	

Modifiers

Table 30: Properties of each modifier.

Id	Name	SBO
s38	Citrullyl AMP intermediate	
s23	Aspartate	
s345	ATP	

Products

Table 31: Properties of each product.

Id	Name	SBO
s39	Arginosuccinate	
s47	AMP	
s363	PPi	

Kinetic Law

Derived unit $\mathrm{mol}^4 \cdot \mathrm{l}^{-3}$

$$v_7 = [\mathrm{s38}] \cdot [\mathrm{s23}] \cdot [\mathrm{s345}] \cdot \mathrm{k1} \tag{14}$$

Table 32: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.8 Reaction re81

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s293} \xrightarrow{\mathrm{s293}} \mathrm{s51} \tag{15}$$

Reactant

Table 33: Properties of each reactant.

Id	Name	SBO
s293	Glyceraldehyde	

Modifier

Table 34: Properties of each modifier.

Id	Name	SBO
s293	Glyceraldehyde	

Product

Table 35: Properties of each product.

Id	Name	SBO
s51	Glycerol3P	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_8 = [\mathrm{s293}] \cdot \mathrm{k1} \tag{16}$$

Table 36: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.9 Reaction re85

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s296} + \mathrm{s67} \xrightarrow{\mathrm{s296,\ s67}} \mathrm{s71} + \mathrm{s93} \tag{17}$$

Reactants

Table 37: Properties of each reactant.

Id	Name	SBO
s296	Lactate	
s67	NADH	

Modifiers

Table 38: Properties of each modifier.

Id	Name	SBO
s296	Lactate	
s67	NADH	

Products

Table 39: Properties of each product.

Id	Name	SBO
s71	Glucose	
s93	NAD+	

Kinetic Law

Derived unit $\text{mol}^3 \cdot \text{l}^{-2}$

$$v_9 = [\text{s296}] \cdot [\text{s67}] \cdot \text{k1} \tag{18}$$

Table 40: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.10 Reaction re27

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\text{s3} + \text{s63} \xrightarrow{\text{s3, s63}} \text{s73} + \text{s46} \tag{19}$$

Reactants

Table 41: Properties of each reactant.

Id	Name	SBO
s3	F6P	
s63	ATP	

Modifiers

Table 42: Properties of each modifier.

Id	Name	SBO
s3	F6P	

Id	Name	SBO
s63	ATP	

Products

Table 43: Properties of each product.

Id	Name	SBO
s73	F1,6P	
s46	ADP	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{10} = [\mathrm{s3}] \cdot [\mathrm{s63}] \cdot \mathrm{k1} \tag{20}$$

Table 44: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.11 Reaction re36

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s8} + \mathrm{s63} \xrightarrow{\mathrm{s8,\ s63}} \mathrm{s74} + \mathrm{s46} \tag{21}$$

Reactants

Table 45: Properties of each reactant.

Id	Name	SBO
s8	3-PGA	
s63	ATP	

Modifiers

Table 46: Properties of each modifier.

Id	Name	SBO
s8	3-PGA	
s63	ATP	

Products

Table 47: Properties of each product.

Id	Name	SBO
s74	1,3-BiPGA	
s46	ADP	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{11} = [\mathrm{s8}] \cdot [\mathrm{s63}] \cdot \mathrm{k1} \tag{22}$$

Table 48: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.12 Reaction re40

This is an irreversible reaction of three reactants forming three products influenced by three modifiers.

Reaction equation

$$\mathrm{s35} + \mathrm{s44} + \mathrm{s93} \xrightarrow{\mathrm{s35,\ s44,\ s93}} \mathrm{s74} + \mathrm{s67} + \mathrm{s329} \tag{23}$$

Reactants

Table 49: Properties of each reactant.

Id	Name	SBO
s35	GA3P	
s44	Pi	
s93	NAD+	

Modifiers

Table 50: Properties of each modifier.

Id	Name	SBO
s35	GA3P	
s44	Pi	
s93	NAD+	

Products

Table 51: Properties of each product.

Id	Name	SBO
s74	1,3-BiPGA	
s67	NADH	
s329	H+	

Kinetic Law

Derived unit $\mathrm{mol}^4 \cdot \mathrm{l}^{-3}$

$$v_{12} = [\mathrm{s35}] \cdot [\mathrm{s44}] \cdot [\mathrm{s93}] \cdot \mathrm{k1} \tag{24}$$

Table 52: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.13 Reaction re38

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

Reaction equation

$$\text{s73} \overset{\text{s73}}{\rightleftharpoons} \text{s82} \tag{25}$$

Reactant

Table 53: Properties of each reactant.

Id	Name	SBO
s73	F1,6P	

Modifier

Table 54: Properties of each modifier.

Id	Name	SBO
s73	F1,6P	

Product

Table 55: Properties of each product.

Id	Name	SBO
s82	DHAP	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{13} = [\text{s73}] \cdot \text{k1} \tag{26}$$

Table 56: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.14 Reaction re49

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s335} \xrightarrow{\mathrm{s335}} \mathrm{s197} \tag{27}$$

Reactant

Table 57: Properties of each reactant.

Id	Name	SBO
s335	UDP-Glucose	

Modifier

Table 58: Properties of each modifier.

Id	Name	SBO
s335	UDP-Glucose	

Product

Table 59: Properties of each product.

Id	Name	SBO
s197	Glycogen Primer	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{14} = [\mathrm{s335}] \cdot \mathrm{k1} \tag{28}$$

Table 60: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.15 Reaction re68

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s262} \xrightarrow{\mathrm{s262}} \mathrm{s258} \tag{29}$$

Reactant

Table 61: Properties of each reactant.

Id	Name	SBO
s262	CyC	

Modifier

Table 62: Properties of each modifier.

Id	Name	SBO
s262	CyC	

Product

Table 63: Properties of each product.

Id	Name	SBO
s258	Cya-a3	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{15} = [\mathrm{s262}] \cdot \mathrm{k1} \tag{30}$$

Table 64: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.16 Reaction re70

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s256} \xrightarrow{\mathrm{s256}} \mathrm{s258} \tag{31}$$

Reactant

Table 65: Properties of each reactant.

Id	Name	SBO
s256	1/2O2	

Modifier

Table 66: Properties of each modifier.

Id	Name	SBO
s256	1/2O2	

Product

Table 67: Properties of each product.

Id	Name	SBO
s258	Cya-a3	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{16} = [\mathrm{s256}] \cdot \mathrm{k1} \tag{32}$$

Table 68: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.17 Reaction re71

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s347} \xrightarrow{\text{s347}} \text{s258} \tag{33}$$

Reactant

Table 69: Properties of each reactant.

Id	Name	SBO
s347	H2O	

Modifier

Table 70: Properties of each modifier.

Id	Name	SBO
s347	H2O	

Product

Table 71: Properties of each product.

Id	Name	SBO
s258	Cya-a3	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{17} = [\text{s347}] \cdot \text{k1} \tag{34}$$

Table 72: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.18 Reaction re76

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s358} \xrightarrow{\mathrm{s358}} \mathrm{s258} \tag{35}$$

Reactant

Table 73: Properties of each reactant.

Id	Name	SBO
s358	2H+	

Modifier

Table 74: Properties of each modifier.

Id	Name	SBO
s358	2H+	

Product

Table 75: Properties of each product.

Id	Name	SBO
s258	Cya-a3	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{18} = [\mathrm{s358}] \cdot \mathrm{k1} \tag{36}$$

Table 76: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.19 Reaction re63

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s374} \xrightarrow{\mathrm{s374}} \mathrm{s259} \tag{37}$$

Reactant

Table 77: Properties of each reactant.

Id	Name	SBO
s374	FeS	

Modifier

Table 78: Properties of each modifier.

Id	Name	SBO
s374	FeS	

Product

Table 79: Properties of each product.

Id	Name	SBO
s259	2e	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{19} = [\mathrm{s374}] \cdot \mathrm{k1} \tag{38}$$

Table 80: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.20 Reaction re75

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s358} \xrightarrow{\mathrm{s358}} \mathrm{s259} \tag{39}$$

Reactant

Table 81: Properties of each reactant.

Id	Name	SBO
s358	2H+	

Modifier

Table 82: Properties of each modifier.

Id	Name	SBO
s358	2H+	

Product

Table 83: Properties of each product.

Id	Name	SBO
s259	2e	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{20} = [\mathrm{s358}] \cdot \mathrm{k1} \tag{40}$$

Table 84: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.21 Reaction re67

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s263} \xrightarrow{\mathrm{s263}} \mathrm{s262} \tag{41}$$

Reactant

Table 85: Properties of each reactant.

Id	Name	SBO
s263	CyC2	

Modifier

Table 86: Properties of each modifier.

Id	Name	SBO
s263	CyC2	

Product

Table 87: Properties of each product.

Id	Name	SBO
s262	CyC	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{21} = [\mathrm{s263}] \cdot \mathrm{k1} \tag{42}$$

Table 88: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.22 Reaction re65

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s388} \xrightarrow{\mathrm{s388}} \mathrm{s263} \tag{43}$$

Reactant

Table 89: Properties of each reactant.

Id	Name	SBO
s388	QH2	

Modifier

Table 90: Properties of each modifier.

Id	Name	SBO
s388	QH2	

Product

Table 91: Properties of each product.

Id	Name	SBO
s263	CyC2	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{22} = [\mathrm{s388}] \cdot \mathrm{k1} \tag{44}$$

Table 92: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.23 Reaction re61

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s388} \xrightarrow{\mathrm{s388}} \mathrm{s265} \tag{45}$$

Reactant

Table 93: Properties of each reactant.

Id	Name	SBO
s388	QH2	

Modifier

Table 94: Properties of each modifier.

Id	Name	SBO
s388	QH2	

Product

Table 95: Properties of each product.

Id	Name	SBO
s265	Cyb	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{23} = [\mathrm{s388}] \cdot \mathrm{k1} \tag{46}$$

Table 96: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.24 Reaction re69

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s358} \xrightarrow{\mathrm{s358}} \mathrm{s267} \tag{47}$$

Reactant

Table 97: Properties of each reactant.

Id	Name	SBO
s358	2H+	

Modifier

Table 98: Properties of each modifier.

Id	Name	SBO
s358	2H+	

Product

Table 99: Properties of each product.

Id	Name	SBO
s267	Q	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{24} = [\mathrm{s358}] \cdot \mathrm{k1} \tag{48}$$

Table 100: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.25 Reaction re59

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s377} + \mathrm{s353} \xrightarrow{\mathrm{s377,\ s353}} \mathrm{s267} + \mathrm{s356} \tag{49}$$

Reactants

Table 101: Properties of each reactant.

Id	Name	SBO
s377	FeS	
s353	FADH2	

Modifiers

Table 102: Properties of each modifier.

Id	Name	SBO
s377	FeS	
s353	FADH2	

Products

Table 103: Properties of each product.

Id	Name	SBO
s267	Q	
s356	FAD	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{25} = [\mathrm{s377}] \cdot [\mathrm{s353}] \cdot \mathrm{k1} \tag{50}$$

Table 104: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.26 Reaction re77

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s381} \xrightarrow{\text{s381}} \text{s269} \tag{51}$$

Reactant

Table 105: Properties of each reactant.

Id	Name	SBO
s381	NADH	

Modifier

Table 106: Properties of each modifier.

Id	Name	SBO
s381	NADH	

Product

Table 107: Properties of each product.

Id	Name	SBO
s269	FMN	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{26} = [\text{s381}] \cdot \text{k1} \tag{52}$$

Table 108: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.27 Reaction re82

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s51} + \mathrm{s53} \xrightarrow{\mathrm{s51,\ s53}} \mathrm{s292} \tag{53}$$

Reactants

Table 109: Properties of each reactant.

Id	Name	SBO
s51	Glycerol3P	
s53	FA	

Modifiers

Table 110: Properties of each modifier.

Id	Name	SBO
s51	Glycerol3P	
s53	FA	

Product

Table 111: Properties of each product.

Id	Name	SBO
s292	Triglyceride	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{27} = [\mathrm{s51}] \cdot [\mathrm{s53}] \cdot \mathrm{k1} \tag{54}$$

Table 112: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.28 Reaction re86

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s11} \xrightarrow{\mathrm{s11}} \mathrm{s296} \tag{55}$$

Reactant

Table 113: Properties of each reactant.

Id	Name	SBO
s11	Pyruvate	

Modifier

Table 114: Properties of each modifier.

Id	Name	SBO
s11	Pyruvate	

Product

Table 115: Properties of each product.

Id	Name	SBO
s296	Lactate	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{28} = [\mathrm{s11}] \cdot \mathrm{k1} \tag{56}$$

Table 116: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.29 Reaction re90

This is an irreversible reaction of one reactant forming two products influenced by one modifier.

Reaction equation

$$\text{s307} \xrightarrow{\text{s307}} \text{s306} + \text{s71} \tag{57}$$

Reactant

Table 117: Properties of each reactant.

Id	Name	SBO
s307	Lactose	

Modifier

Table 118: Properties of each modifier.

Id	Name	SBO
s307	Lactose	

Products

Table 119: Properties of each product.

Id	Name	SBO
s306	Galactose	
s71	Glucose	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{29} = [\text{s307}] \cdot \text{k1} \tag{58}$$

Table 120: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.30 Reaction re93

This is an irreversible reaction of one reactant forming two products influenced by one modifier.

Reaction equation

$$\mathrm{s322} \xrightarrow{\mathrm{s322}} \mathrm{s323} + \mathrm{s348} \tag{59}$$

Reactant

Table 121: Properties of each reactant.

Id	Name	SBO
s322	HMGCoA	

Modifier

Table 122: Properties of each modifier.

Id	Name	SBO
s322	HMGCoA	

Products

Table 123: Properties of each product.

Id	Name	SBO
s323	Acetoacetate	
s348	A CoA	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{30} = [\mathrm{s322}] \cdot \mathrm{k1} \tag{60}$$

Table 124: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.31 Reaction re1

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s378} \xrightarrow{\text{s378}} \text{s340} \tag{61}$$

Reactant

Table 125: Properties of each reactant.

Id	Name	SBO
s378	Glutamine	

Modifier

Table 126: Properties of each modifier.

Id	Name	SBO
s378	Glutamine	

Product

Table 127: Properties of each product.

Id	Name	SBO
s340	Glutamine	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{31} = [\text{s378}] \cdot \text{k2} \tag{62}$$

Table 128: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑
k2	k2		1.0	mol	☑

5.32 Reaction re10

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s342} \xrightarrow{\text{s342}} \text{s342} \tag{63}$$

Reactant

Table 129: Properties of each reactant.

Id	Name	SBO
s342	Citrulline	

Modifier

Table 130: Properties of each modifier.

Id	Name	SBO
s342	Citrulline	

Product

Table 131: Properties of each product.

Id	Name	SBO
s342	Citrulline	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{32} = [\text{s342}] \cdot \text{k1} \tag{64}$$

Table 132: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.33 Reaction re9

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s34} + \mathrm{s33} \xrightarrow{\mathrm{s34,\ s33}} \mathrm{s342} + \mathrm{s344} \tag{65}$$

Reactants

Table 133: Properties of each reactant.

Id	Name	SBO
s34	Ornithine	
s33	Carbamoyl phosphate	

Modifiers

Table 134: Properties of each modifier.

Id	Name	SBO
s34	Ornithine	
s33	Carbamoyl phosphate	

Products

Table 135: Properties of each product.

Id	Name	SBO
s342	Citrulline	
s344	Pi	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{33} = [\mathrm{s34}] \cdot [\mathrm{s33}] \cdot \mathrm{k1} \tag{66}$$

Table 136: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.34 Reaction re24

This is an irreversible reaction of one reactant forming two products influenced by one modifier.

Reaction equation

$$\text{s39} \xrightarrow{\text{s39}} \text{s343} + \text{s40} \tag{67}$$

Reactant

Table 137: Properties of each reactant.

Id	Name	SBO
s39	Arginosuccinate	

Modifier

Table 138: Properties of each modifier.

Id	Name	SBO
s39	Arginosuccinate	

Products

Table 139: Properties of each product.

Id	Name	SBO
s343	Arginine	
s40	Fumarate	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{34} = [\text{s39}] \cdot \text{k1} \tag{68}$$

Table 140: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.35 Reaction re13

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s343} + \mathrm{s347} \xrightarrow{\mathrm{s343,\ s347}} \mathrm{s343} + \mathrm{s49} \tag{69}$$

Reactants

Table 141: Properties of each reactant.

Id	Name	SBO
s343	Arginine	
s347	H2O	

Modifiers

Table 142: Properties of each modifier.

Id	Name	SBO
s343	Arginine	
s347	H2O	

Products

Table 143: Properties of each product.

Id	Name	SBO
s343	Arginine	
s49	UREA	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{35} = [\text{s343}] \cdot [\text{s347}] \cdot \text{k1} \tag{70}$$

Table 144: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.36 Reaction re150

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s37} \xrightarrow{\text{s37}} \text{s348} \tag{71}$$

Reactant

Table 145: Properties of each reactant.

Id	Name	SBO
s37	C22 Ketoacyl-CoA	

Modifier

Table 146: Properties of each modifier.

Id	Name	SBO
s37	C22 Ketoacyl-CoA	

Product

Table 147: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{36} = [\text{s37}] \cdot \text{k1} \tag{72}$$

Table 148: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.37 Reaction re151

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s66} \xrightarrow{\text{s66}} \text{s348} \tag{73}$$

Reactant

Table 149: Properties of each reactant.

Id	Name	SBO
s66	C20 Ketoacyl-CoA	

Modifier

Table 150: Properties of each modifier.

Id	Name	SBO
s66	C20 Ketoacyl-CoA	

Product

Table 151: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{37} = [\text{s66}] \cdot \text{k1} \tag{74}$$

Table 152: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.38 Reaction re152

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s116} \xrightarrow{\text{s116}} \text{s348} \tag{75}$$

Reactant

Table 153: Properties of each reactant.

Id	Name	SBO
s116	C6 Ketoacyl-CoA	

Modifier

Table 154: Properties of each modifier.

Id	Name	SBO
s116	C6 Ketoacyl-CoA	

Product

Table 155: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{38} = [\text{s116}] \cdot \text{k1} \tag{76}$$

Table 156: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.39 Reaction re153

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s80} \xrightarrow{\text{s80}} \text{s348} \tag{77}$$

Reactant

Table 157: Properties of each reactant.

Id	Name	SBO
s80	C18 Ketoacyl-CoA	

Modifier

Table 158: Properties of each modifier.

Id	Name	SBO
s80	C18 Ketoacyl-CoA	

Product

Table 159: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{39} = [\text{s80}] \cdot \text{k1} \tag{78}$$

Table 160: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.40 Reaction re154

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s111} \xrightarrow{\text{s111}} \text{s348} \tag{79}$$

Reactant

Table 161: Properties of each reactant.

Id	Name	SBO
s111	C8 Ketoacyl-CoA	

Modifier

Table 162: Properties of each modifier.

Id	Name	SBO
s111	C8 Ketoacyl-CoA	

Product

Table 163: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{40} = [\text{s111}] \cdot \text{k1} \tag{80}$$

Table 164: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.41 Reaction re155

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s108} \xrightarrow{\text{s108}} \text{s348} \tag{81}$$

Reactant

Table 165: Properties of each reactant.

Id	Name	SBO
s108	C10 Ketoacyl-CoA	

Modifier

Table 166: Properties of each modifier.

Id	Name	SBO
s108	C10 Ketoacyl-CoA	

Product

Table 167: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{41} = [\text{s108}] \cdot \text{k1} \tag{82}$$

Table 168: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.42 Reaction re156

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s89} \xrightarrow{\text{s89}} \text{s348} \tag{83}$$

Reactant

Table 169: Properties of each reactant.

Id	Name	SBO
s89	C16 Ketoacyl-CoA	

Modifier

Table 170: Properties of each modifier.

Id	Name	SBO
s89	C16 Ketoacyl-CoA	

Product

Table 171: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{42} = [\text{s89}] \cdot \text{k1} \tag{84}$$

Table 172: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.43 Reaction re157

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s100} \xrightarrow{\text{s100}} \text{s348} \tag{85}$$

Reactant

Table 173: Properties of each reactant.

Id	Name	SBO
s100	C14 Ketoacyl-CoA	

Modifier

Table 174: Properties of each modifier.

Id	Name	SBO
s100	C14 Ketoacyl-CoA	

Product

Table 175: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{43} = [\text{s100}] \cdot \text{k1} \tag{86}$$

Table 176: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.44 Reaction re158

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s103} \xrightarrow{\text{s103}} \text{s348} \tag{87}$$

Reactant

Table 177: Properties of each reactant.

Id	Name	SBO
s103	C12 Ketoacyl-CoA	

Modifier

Table 178: Properties of each modifier.

Id	Name	SBO
s103	C12 Ketoacyl-CoA	

Product

Table 179: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{44} = [\text{s103}] \cdot \text{k1} \tag{88}$$

Table 180: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.45 Reaction re100

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s353} \xrightarrow{\text{s353}} \text{s353} \tag{89}$$

Reactant

Table 181: Properties of each reactant.

Id	Name	SBO
s353	FADH2	

Modifier

Table 182: Properties of each modifier.

Id	Name	SBO
s353	FADH2	

Product

Table 183: Properties of each product.

Id	Name	SBO
s353	FADH2	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{45} = [\text{s353}] \cdot \text{k1} \tag{90}$$

Table 184: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.46 Reaction re78

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s269} \xrightarrow{\text{s269}} \text{s355} \tag{91}$$

Reactant

Table 185: Properties of each reactant.

Id	Name	SBO
s269	FMN	

Modifier

Table 186: Properties of each modifier.

Id	Name	SBO
s269	FMN	

Product

Table 187: Properties of each product.

Id	Name	SBO
s355	NAD+	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{46} = [\text{s269}] \cdot \text{k1} \tag{92}$$

Table 188: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.47 Reaction re104

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s355} \xrightarrow{\text{s355}} \text{s355} \tag{93}$$

Reactant

Table 189: Properties of each reactant.

Id	Name	SBO
s355	NAD+	

Modifier

Table 190: Properties of each modifier.

Id	Name	SBO
s355	NAD+	

Product

Table 191: Properties of each product.

Id	Name	SBO
s355	NAD+	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{47} = [\text{s355}] \cdot \text{k1} \tag{94}$$

Table 192: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.48 Reaction re105

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s355} \xrightarrow{\text{s355}} \text{s355} \tag{95}$$

Reactant

Table 193: Properties of each reactant.

Id	Name	SBO
s355	NAD+	

Modifier

Table 194: Properties of each modifier.

Id	Name	SBO
s355	NAD+	

Product

Table 195: Properties of each product.

Id	Name	SBO
s355	NAD+	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{48} = [\text{s355}] \cdot \text{k1} \tag{96}$$

Table 196: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.49 Reaction re106

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s355} \xrightarrow{\text{s355}} \text{s355} \tag{97}$$

Reactant

Table 197: Properties of each reactant.

Id	Name	SBO
s355	NAD+	

Modifier

Table 198: Properties of each modifier.

Id	Name	SBO
s355	NAD+	

Product

Table 199: Properties of each product.

Id	Name	SBO
s355	NAD+	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{49} = [\text{s355}] \cdot \text{k1} \tag{98}$$

Table 200: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.50 Reaction re108

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s355} \xrightarrow{\text{s355}} \text{s355} \tag{99}$$

Reactant

Table 201: Properties of each reactant.

Id	Name	SBO
s355	NAD+	

Modifier

Table 202: Properties of each modifier.

Id	Name	SBO
s355	NAD+	

Product

Table 203: Properties of each product.

Id	Name	SBO
s355	NAD+	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{50} = [\text{s355}] \cdot \text{k1} \tag{100}$$

Table 204: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.51 Reaction re107

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s356} \xrightarrow{\text{s356}} \text{s356} \tag{101}$$

Reactant

Table 205: Properties of each reactant.

Id	Name	SBO
s356	FAD	

Modifier

Table 206: Properties of each modifier.

Id	Name	SBO
s356	FAD	

Product

Table 207: Properties of each product.

Id	Name	SBO
s356	FAD	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{51} = [\text{s356}] \cdot \text{k1} \tag{102}$$

Table 208: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.52 Reaction re62

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s265} \xrightarrow{\text{s265}} \text{s374} \tag{103}$$

Reactant

Table 209: Properties of each reactant.

Id	Name	SBO
s265	Cyb	

Modifier

Table 210: Properties of each modifier.

Id	Name	SBO
s265	Cyb	

Product

Table 211: Properties of each product.

Id	Name	SBO
s374	FeS	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{52} = [\text{s265}] \cdot \text{k1} \tag{104}$$

Table 212: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.53 Reaction re58

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s269} \xrightarrow{\text{s269}} \text{s377} \tag{105}$$

Reactant

Table 213: Properties of each reactant.

Id	Name	SBO
s269	FMN	

Modifier

Table 214: Properties of each modifier.

Id	Name	SBO
s269	FMN	

Product

Table 215: Properties of each product.

Id	Name	SBO
s377	FeS	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{53} = [\text{s269}] \cdot \text{k1} \tag{106}$$

Table 216: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.54 Reaction re66

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\text{s377} \xrightarrow{\text{s377}} \text{s377} \tag{107}$$

Reactant

Table 217: Properties of each reactant.

Id	Name	SBO
s377	FeS	

Modifier

Table 218: Properties of each modifier.

Id	Name	SBO
s377	FeS	

Product

Table 219: Properties of each product.

Id	Name	SBO
s377	FeS	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{54} = [\text{s377}] \cdot \text{k1} \tag{108}$$

Table 220: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.55 Reaction re5

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s14} + \mathrm{s21} \xrightarrow{\mathrm{s14,\ s21}} \mathrm{s379} + \mathrm{s17} \tag{109}$$

Reactants

Table 221: Properties of each reactant.

Id	Name	SBO
s14	Alanine	
s21	Alpha KG	

Modifiers

Table 222: Properties of each modifier.

Id	Name	SBO
s14	Alanine	
s21	Alpha KG	

Products

Table 223: Properties of each product.

Id	Name	SBO
s379	Glutamate	
s17	Alpha keto acid	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{55} = [\text{s14}] \cdot [\text{s21}] \cdot \text{k1} \tag{110}$$

Table 224: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.56 Reaction re2

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\text{s12} + \text{s17} \xrightarrow{\text{s12, s17}} \text{s379} + \text{s21} \tag{111}$$

Reactants

Table 225: Properties of each reactant.

Id	Name	SBO
s12	Amino acids	
s17	Alpha keto acid	

Modifiers

Table 226: Properties of each modifier.

Id	Name	SBO
s12	Amino acids	
s17	Alpha keto acid	

Products

Table 227: Properties of each product.

Id	Name	SBO
s379	Glutamate	
s21	Alpha KG	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{56} = [\mathrm{s12}] \cdot [\mathrm{s17}] \cdot \mathrm{k1} \tag{112}$$

Table 228: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.57 Reaction re101

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s351} \xrightarrow{\mathrm{s351}} \mathrm{s381} \tag{113}$$

Reactant

Table 229: Properties of each reactant.

Id	Name	SBO
s351	NADH	

Modifier

Table 230: Properties of each modifier.

Id	Name	SBO
s351	NADH	

Product

Table 231: Properties of each product.

Id	Name	SBO
s381	NADH	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{57} = [\mathrm{s351}] \cdot \mathrm{k1} \tag{114}$$

Table 232: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.58 Reaction re102

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s351} \xrightarrow{\mathrm{s351}} \mathrm{s381} \tag{115}$$

Reactant

Table 233: Properties of each reactant.

Id	Name	SBO
s351	NADH	

Modifier

Table 234: Properties of each modifier.

Id	Name	SBO
s351	NADH	

Product

Table 235: Properties of each product.

Id	Name	SBO
s381	NADH	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{58} = [\mathrm{s351}] \cdot \mathrm{k1} \tag{116}$$

Table 236: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.59 Reaction re103

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s351} \xrightarrow{\mathrm{s351}} \mathrm{s381} \tag{117}$$

Reactant

Table 237: Properties of each reactant.

Id	Name	SBO
s351	NADH	

Modifier

Table 238: Properties of each modifier.

Id	Name	SBO
s351	NADH	

Product

Table 239: Properties of each product.

Id	Name	SBO
s381	NADH	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{59} = [\mathrm{s351}] \cdot \mathrm{k1} \tag{118}$$

Table 240: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.60 Reaction re109

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s351} \xrightarrow{\mathrm{s351}} \mathrm{s381} \tag{119}$$

Reactant

Table 241: Properties of each reactant.

Id	Name	SBO
s351	NADH	

Modifier

Table 242: Properties of each modifier.

Id	Name	SBO
s351	NADH	

Product

Table 243: Properties of each product.

Id	Name	SBO
s381	NADH	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{60} = [\mathrm{s351}] \cdot \mathrm{k1} \tag{120}$$

Table 244: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.61 Reaction re60

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s267} \xrightarrow{\mathrm{s267}} \mathrm{s388} \tag{121}$$

Reactant

Table 245: Properties of each reactant.

Id	Name	SBO
s267	Q	

Modifier

Table 246: Properties of each modifier.

Id	Name	SBO
s267	Q	

Product

Table 247: Properties of each product.

Id	Name	SBO
s388	QH2	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{61} = [\mathrm{s267}] \cdot \mathrm{k1} \tag{122}$$

Table 248: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.62 Reaction re64

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s259} \xrightarrow{\mathrm{s259}} \mathrm{s388} \tag{123}$$

Reactant

Table 249: Properties of each reactant.

Id	Name	SBO
s259	2e	

Modifier

Table 250: Properties of each modifier.

Id	Name	SBO
s259	2e	

Product

Table 251: Properties of each product.

Id	Name	SBO
s388	QH2	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{62} = [\mathrm{s259}] \cdot \mathrm{k1} \tag{124}$$

Table 252: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.63 Reaction re72

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s269} \xrightarrow{\mathrm{s269}} \mathrm{s389} \tag{125}$$

Reactant

Table 253: Properties of each reactant.

Id	Name	SBO
s269	FMN	

Modifier

Table 254: Properties of each modifier.

Id	Name	SBO
s269	FMN	

Product

Table 255: Properties of each product.

Id	Name	SBO
s389	2H+	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{63} = [\mathrm{s269}] \cdot \mathrm{k1} \tag{126}$$

Table 256: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.64 Reaction re73

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s388} \xrightarrow{\mathrm{s388}} \mathrm{s389} \tag{127}$$

Reactant

Table 257: Properties of each reactant.

Id	Name	SBO
s388	QH2	

Modifier

Table 258: Properties of each modifier.

Id	Name	SBO
s388	QH2	

Product

Table 259: Properties of each product.

Id	Name	SBO
s389	2H+	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{64} = [\mathrm{s388}] \cdot \mathrm{k1} \tag{128}$$

Table 260: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.65 Reaction re74

This is an irreversible reaction of one reactant forming one product influenced by one modifier.

Reaction equation

$$\mathrm{s388} \xrightarrow{\mathrm{s388}} \mathrm{s389} \tag{129}$$

Reactant

Table 261: Properties of each reactant.

Id	Name	SBO
s388	QH2	

Modifier

Table 262: Properties of each modifier.

Id	Name	SBO
s388	QH2	

Product

Table 263: Properties of each product.

Id	Name	SBO
s389	2H+	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{65} = [\mathrm{s388}] \cdot \mathrm{k1} \tag{130}$$

Table 264: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.66 Reaction re89

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s302} + \mathrm{s301} \xrightarrow{\mathrm{s13,\ s302}} \mathrm{s335} + \mathrm{s300} + \mathrm{s329} \tag{131}$$

Reactants

Table 265: Properties of each reactant.

Id	Name	SBO
s302	Galactose1P	
s301	2NAD+	

Modifiers

Table 266: Properties of each modifier.

Id	Name	SBO
s13	UDP glucose4epimerase	
s302	Galactose1P	

Products

Table 267: Properties of each product.

Id	Name	SBO
s335	UDP-Glucose	
s300	2NADH	
s329	H+	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{66} = \frac{\text{v1} \cdot [\text{s302}]}{\text{k1} + [\text{s302}]} \tag{132}$$

Table 268: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.000	mol	☑
k1	k1		0.069	mol	☑

5.67 Reaction re25

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\text{s71} + \text{s63} \xrightarrow{\text{s16, s71}} \text{s234} + \text{s46} \tag{133}$$

Reactants

Table 269: Properties of each reactant.

Id	Name	SBO
s71	Glucose	
s63	ATP	

Modifiers

Table 270: Properties of each modifier.

Id	Name	SBO
s16	Hexokinase	
s71	Glucose	

Products

Table 271: Properties of each product.

Id	Name	SBO
s234	G6P	
s46	ADP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{67} = \frac{\mathrm{v1} \cdot [\mathrm{s71}]}{\mathrm{k1} + [\mathrm{s71}]} \tag{134}$$

Table 272: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.000	mol	☑
k1	k1		0.048	mol	☑

5.68 Reaction re4

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s340} \xrightarrow{\mathrm{s18,\ s340}} \mathrm{s341} \tag{135}$$

Reactant

Table 273: Properties of each reactant.

Id	Name	SBO
s340	Glutamine	

Modifiers

Table 274: Properties of each modifier.

Id	Name	SBO
s18	Glutaminase	
s340	Glutamine	

Product

Table 275: Properties of each product.

Id	Name	SBO
s341	Glutamate	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{68} = \frac{\mathrm{v1} \cdot [\mathrm{s340}]}{\mathrm{k1} + [\mathrm{s340}]} \tag{136}$$

Table 276: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.04	mol	☑

5.69 Reaction re3

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\mathrm{s379} + \mathrm{s50} \xrightarrow{\mathrm{s24,\ s379,\ s50}} \mathrm{s341} + \mathrm{s23} \tag{137}$$

Reactants

Table 277: Properties of each reactant.

Id	Name	SBO
s379	Glutamate	
s50	OAA	

Modifiers

Table 278: Properties of each modifier.

Id	Name	SBO
s24	Aspartate aminotransferase	
s379	Glutamate	
s50	OAA	

Products

Table 279: Properties of each product.

Id	Name	SBO
s341	Glutamate	
s23	Aspartate	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{69} = [\mathrm{s379}] \cdot [\mathrm{s50}] \cdot \mathrm{k1} \tag{138}$$

Table 280: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.70 Reaction re20

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

Reaction equation

$$\mathrm{s7} + \mathrm{s356} \overset{\mathrm{s26,\ s7}}{\rightleftharpoons} \mathrm{s40} + \mathrm{s353} \tag{139}$$

Reactants

Table 281: Properties of each reactant.

Id	Name	SBO
s7	Succinate	
s356	FAD	

Modifiers

Table 282: Properties of each modifier.

Id	Name	SBO
s26	Succinate dehydrogenase	
s7	Succinate	

Products

Table 283: Properties of each product.

Id	Name	SBO
s40	Fumarate	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{70} = \frac{\mathrm{v1} \cdot [\mathrm{s7}]}{\mathrm{k1} + [\mathrm{s7}]} \tag{140}$$

Table 284: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		875.0	mol	☑

5.71 Reaction re21

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

Reaction equation

$$\mathrm{s40} + \mathrm{s347} \overset{\mathrm{s27,\ s40}}{\rightleftharpoons} \mathrm{s9} \tag{141}$$

Reactants

Table 285: Properties of each reactant.

Id	Name	SBO
s40	Fumarate	
s347	H2O	

Modifiers

Table 286: Properties of each modifier.

Id	Name	SBO
s27	Fumarase	
s40	Fumarate	

Product

Table 287: Properties of each product.

Id	Name	SBO
s9	Malate	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{71} = \frac{\mathrm{v1} \cdot [\mathrm{s40}]}{\mathrm{k1} + [\mathrm{s40}]} \tag{142}$$

Table 288: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.000	mol	☑
k1	k1		0.013	mol	☑

5.72 Reaction re22

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

Reaction equation

$$\mathrm{s9} + \mathrm{s355} \overset{\mathrm{s28,\ s9}}{\rightleftharpoons} \mathrm{s50} + \mathrm{s351} + \mathrm{s361} \tag{143}$$

Reactants

Table 289: Properties of each reactant.

Id	Name	SBO
s9	Malate	
s355	NAD+	

Modifiers

Table 290: Properties of each modifier.

Id	Name	SBO
s28	Malate dehydrogenase	
s9	Malate	

Products

Table 291: Properties of each product.

Id	Name	SBO
s50	OAA	
s351	NADH	

Id	Name	SBO
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{72} = \frac{\mathrm{v1} \cdot [\mathrm{s9}]}{\mathrm{k1} + [\mathrm{s9}]} \tag{144}$$

Table 292: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.000	mol	☑
k1	k1		$3.8 \cdot 10^{-4}$	mol	☑

5.73 Reaction re33

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s73} + \mathrm{s64} \xrightarrow{\mathrm{s31,\ s73}} \mathrm{s3} + \mathrm{s44} \tag{145}$$

Reactants

Table 293: Properties of each reactant.

Id	Name	SBO
s73	F1,6P	
s64	H2O	

Modifiers

Table 294: Properties of each modifier.

Id	Name	SBO
s31	F1,6BISPHOSPHATASE	
s73	F1,6P	

Products

Table 295: Properties of each product.

Id	Name	SBO
s3	F6P	
s44	Pi	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{73} = \frac{\text{v1} \cdot [\text{s73}]}{\text{k1} + [\text{s73}]} \tag{146}$$

Table 296: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		1.3	mol	☑

5.74 Reaction re39

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

Reaction equation

$$\text{s35} \underset{\text{s36, s35}}{\rightleftharpoons} \text{s82} \tag{147}$$

Reactant

Table 297: Properties of each reactant.

Id	Name	SBO
s35	GA3P	

Modifiers

Table 298: Properties of each modifier.

Id	Name	SBO
s36	PHOSPHO TRIOSE ISOMERASE	
s35	GA3P	

Product

Table 299: Properties of each product.

Id	Name	SBO
s82	DHAP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{74} = \frac{\mathrm{v1} \cdot [\mathrm{s35}]}{\mathrm{k1} + [\mathrm{s35}]} \tag{148}$$

Table 300: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		13.6	mol	☑

5.75 Reaction re6

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s25} + \mathrm{s29} \xrightarrow{\mathrm{s41,\ s25}} \mathrm{s33} + \mathrm{s30} \tag{149}$$

Reactants

Table 301: Properties of each reactant.

Id	Name	SBO
s25	HCO3-+ NH4+	
s29	2ATP	

Modifiers

Table 302: Properties of each modifier.

Id	Name	SBO
s41	Carbamoyl phosphate synthetase I	
s25	HCO3-+ NH4+	

Products

Table 303: Properties of each product.

Id	Name	SBO
s33	Carbamoyl phosphate	
s30	2ADP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{75} = \frac{\mathrm{v1} \cdot [\mathrm{s25}]}{\mathrm{k1} + [\mathrm{s25}]} \tag{150}$$

Table 304: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		13.0	mol	☑

5.76 Reaction re29

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

Reaction equation

$$\mathrm{s8} \overset{\mathrm{s43,\ s8}}{\rightleftharpoons} \mathrm{s75} \tag{151}$$

Reactant

Table 305: Properties of each reactant.

Id	Name	SBO
s8	3-PGA	

Modifiers

Table 306: Properties of each modifier.

Id	Name	SBO
s43	PGA MUTASE	
s8	3-PGA	

Product

Table 307: Properties of each product.

Id	Name	SBO
s75	2-PGA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{76} = \frac{\mathrm{v1} \cdot [\mathrm{s8}]}{\mathrm{k1} + [\mathrm{s8}]} \tag{152}$$

Table 308: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		0.1	mol	☑

5.77 Reaction re31

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s10} + \mathrm{s46} \xrightarrow{\mathrm{s45,\ s10}} \mathrm{s11} + \mathrm{s63} \tag{153}$$

Reactants

Table 309: Properties of each reactant.

Id	Name	SBO
s10	PEP	
s46	ADP	

Modifiers

Table 310: Properties of each modifier.

Id	Name	SBO
s45	PYRUVATE KINASE	
s10	PEP	

Products

Table 311: Properties of each product.

Id	Name	SBO
s11	Pyruvate	
s63	ATP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{77} = \frac{\mathrm{v1} \cdot [\mathrm{s10}]}{\mathrm{k1} + [\mathrm{s10}]} \tag{154}$$

Table 312: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		5.8	mol	☑

5.78 Reaction re15

This is an irreversible reaction of four reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s348} + \mathrm{s349} + \mathrm{s50} + \mathrm{s347} \xrightarrow{\mathrm{s54,\ s348}} \mathrm{s2} + \mathrm{s350} \tag{155}$$

Reactants

Table 313: Properties of each reactant.

Id	Name	SBO
s348	A CoA	
s349	CO2	
s50	OAA	
s347	H2O	

Modifiers

Table 314: Properties of each modifier.

Id	Name	SBO
s54	Citrate Synthase	
s348	A CoA	

Products

Table 315: Properties of each product.

Id	Name	SBO
s2	Citrate	
s350	CoA-SH	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{78} = \frac{\mathrm{v1} \cdot [\mathrm{s348}]}{\mathrm{k1} + [\mathrm{s348}]} \tag{156}$$

Table 316: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.11	mol	☑

5.79 Reaction re23

This is an irreversible reaction of two reactants forming four products influenced by two modifiers.

Reaction equation

$$\mathrm{s52} + \mathrm{s355} \xrightarrow{\mathrm{s56,\ s52}} \mathrm{s5} + \mathrm{s349} + \mathrm{s351} + \mathrm{s361} \tag{157}$$

Reactants

Table 317: Properties of each reactant.

Id	Name	SBO
s52	Isocitrate	
s355	NAD+	

Modifiers

Table 318: Properties of each modifier.

Id	Name	SBO
s56	Isocitrate dehydrogenase	
s52	Isocitrate	

Products

Table 319: Properties of each product.

Id	Name	SBO
s5	Alpha-KG	
s349	CO2	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{79} = \frac{\text{v1} \cdot [\text{s52}]}{\text{k1} + [\text{s52}]} \tag{158}$$

Table 320: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		73.0	mol	☑

5.80 Reaction re18

This is an irreversible reaction of three reactants forming four products influenced by two modifiers.

Reaction equation

$$\text{s5} + \text{s350} + \text{s355} \xrightarrow{\text{s57, s5}} \text{s6} + \text{s349} + \text{s351} + \text{s361} \tag{159}$$

Reactants

Table 321: Properties of each reactant.

Id	Name	SBO
s5	Alpha-KG	
s350	CoA-SH	
s355	NAD+	

Modifiers

Table 322: Properties of each modifier.

Id	Name	SBO
s57	Alpha-KG dehydrgenase complex	
s5	Alpha-KG	

Products

Table 323: Properties of each product.

Id	Name	SBO
s6	S CoA	
s349	CO2	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{80} = \frac{\mathrm{v1} \cdot [\mathrm{s5}]}{\mathrm{k1} + [\mathrm{s5}]} \tag{160}$$

Table 324: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		490.0	mol	☑

5.81 Reaction re19

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

Reaction equation

$$\mathrm{s6} + \mathrm{s352} \overset{\mathrm{s58,\ s6}}{\rightleftharpoons} \mathrm{s7} + \mathrm{s345} + \mathrm{s350} \tag{161}$$

Reactants

Table 325: Properties of each reactant.

Id	Name	SBO
s6	S CoA	
s352	GDP	

Modifiers

Table 326: Properties of each modifier.

Id	Name	SBO
s58	S CoA synthase	
s6	S CoA	

Products

Table 327: Properties of each product.

Id	Name	SBO
s7	Succinate	
s345	ATP	
s350	CoA-SH	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{81} = \frac{\mathrm{v1} \cdot [\mathrm{s6}]}{\mathrm{k1} + [\mathrm{s6}]} \tag{162}$$

Table 328: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.09	mol	☑

5.82 Reaction re32

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s234} + \mathrm{s32} \xrightarrow{\mathrm{s77,\ s234}} \mathrm{s71} + \mathrm{s44} \tag{163}$$

Reactants

Table 329: Properties of each reactant.

Id	Name	SBO
s234	G6P	
s32	H20	

Modifiers

Table 330: Properties of each modifier.

Id	Name	SBO
s77	G-6-P Phosphatase	
s234	G6P	

Products

Table 331: Properties of each product.

Id	Name	SBO
s71	Glucose	
s44	Pi	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{82} = \frac{\mathrm{v1} \cdot [\mathrm{s234}]}{\mathrm{k1} + [\mathrm{s234}]} \tag{164}$$

Table 332: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		2.0	mol	☑

5.83 Reaction re26

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

Reaction equation

$$\text{s234} \xrightleftharpoons{\text{s79, s234}} \text{s3} \tag{165}$$

Reactant

Table 333: Properties of each reactant.

Id	Name	SBO
s234	G6P	

Modifiers

Table 334: Properties of each modifier.

Id	Name	SBO
s79	Phosphohexo isomerase	
s234	G6P	

Product

Table 335: Properties of each product.

Id	Name	SBO
s3	F6P	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{83} = \frac{\text{v1} \cdot [\text{s234}]}{\text{k1} + [\text{s234}]} \tag{166}$$

Table 336: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.000	mol	☑
k1	k1		$2.13 \cdot 10^{-4}$	mol	☑

5.84 Reaction re41

This is an irreversible reaction of three reactants forming three products influenced by two modifiers.

Reaction equation

$$\text{s74} + \text{s67} + \text{s329} \xrightarrow{\text{s85, s74}} \text{s35} + \text{s44} + \text{s93} \tag{167}$$

Reactants

Table 337: Properties of each reactant.

Id	Name	SBO
s74	1,3-BiPGA	
s67	NADH	
s329	H+	

Modifiers

Table 338: Properties of each modifier.

Id	Name	SBO
s85	G3P DEHYDROGENASE	
s74	1,3-BiPGA	

Products

Table 339: Properties of each product.

Id	Name	SBO
s35	GA3P	
s44	Pi	
s93	NAD+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{84} = \frac{\mathrm{v1} \cdot [\mathrm{s74}]}{\mathrm{k1} + [\mathrm{s74}]} \tag{168}$$

Table 340: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		33.0	mol	☑

5.85 Reaction re28

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\mathrm{s74} + \mathrm{s46} \xrightarrow{\mathrm{s86,\ s333,\ s74}} \mathrm{s8} + \mathrm{s63} \tag{169}$$

Reactants

Table 341: Properties of each reactant.

Id	Name	SBO
s74	1,3-BiPGA	
s46	ADP	

Modifiers

Table 342: Properties of each modifier.

Id	Name	SBO
s86	PGA KINASE	
s333	Mg2+	
s74	1,3-BiPGA	

Products

Table 343: Properties of each product.

Id	Name	SBO
s8	3-PGA	
s63	ATP	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{85} = \frac{\text{v1} \cdot [\text{s74}]}{\text{k1} + [\text{s74}]} \tag{170}$$

Table 344: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		300.0	mol	☑

5.86 Reaction re30

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\text{s75} \xrightarrow{\text{s87, s75}} \text{s10} \tag{171}$$

Reactant

Table 345: Properties of each reactant.

Id	Name	SBO
s75	2-PGA	

Modifiers

Table 346: Properties of each modifier.

Id	Name	SBO
s87	ENOLASE	

Id	Name	SBO
s75	2-PGA	

Product

Table 347: Properties of each product.

Id	Name	SBO
s10	PEP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{86} = \frac{\mathrm{v1} \cdot [\mathrm{s75}]}{\mathrm{k1} + [\mathrm{s75}]} \tag{172}$$

Table 348: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		300.0	mol	☑

5.87 Reaction re35

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s81} + \mathrm{s241} \xrightarrow{\mathrm{s88,\ s81}} \mathrm{s10} + \mathrm{s48} \tag{173}$$

Reactants

Table 349: Properties of each reactant.

Id	Name	SBO
s81	OXALOACETATE	
s241	GDP	

Modifiers

Table 350: Properties of each modifier.

Id	Name	SBO
s88	PEP CARBOXYKINASE	
s81	OXALOACETATE	

Products

Table 351: Properties of each product.

Id	Name	SBO
s10	PEP	
s48	GTP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{87} = \frac{\mathrm{v1} \cdot [\mathrm{s81}]}{\mathrm{k1} + [\mathrm{s81}]} \tag{174}$$

Table 352: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		791.0	mol	☑

5.88 Reaction re34

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s11} + \mathrm{s63} \xrightarrow{\mathrm{s90,\ s11}} \mathrm{s81} + \mathrm{s46} \tag{175}$$

Reactants

Table 353: Properties of each reactant.

Id	Name	SBO
s11	Pyruvate	
s63	ATP	

Modifiers

Table 354: Properties of each modifier.

Id	Name	SBO
s90	PYRUVATE CARBOXYLASE	
s11	Pyruvate	

Products

Table 355: Properties of each product.

Id	Name	SBO
s81	OXALOACETATE	
s46	ADP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{88} = \frac{\mathrm{v1} \cdot [\mathrm{s11}]}{\mathrm{k1} + [\mathrm{s11}]} \tag{176}$$

Table 356: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.11	mol	☑

5.89 Reaction re42

This is an irreversible reaction of six reactants forming three products influenced by three modifiers.

Reaction equation

$$\mathrm{s11} + \mathrm{s94} + \mathrm{s92} + \mathrm{s355} + \mathrm{s356} + \mathrm{s95} \xrightarrow{\mathrm{s91,\ s357,\ s11}} \mathrm{s348} + \mathrm{s351} + \mathrm{s361} \tag{177}$$

Reactants

Table 357: Properties of each reactant.

Id	Name	SBO
s11	Pyruvate	
s94	TPP	
s92	Co-Ash	
s355	NAD+	
s356	FAD	
s95	LIPOATE	

Modifiers

Table 358: Properties of each modifier.

Id	Name	SBO
s91	PYRUVATE DEHYDROGENASE	
s357	Mg2+	
s11	Pyruvate	

Products

Table 359: Properties of each product.

Id	Name	SBO
s348	A CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{89} = \frac{\mathrm{v1} \cdot [\mathrm{s11}]}{\mathrm{k1} + [\mathrm{s11}]} \tag{178}$$

Table 360: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		40.0	mol	☑

5.90 Reaction re164

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\text{s127} \xrightarrow{\text{s122, s127}} \text{s367} \tag{179}$$

Reactant

Table 361: Properties of each reactant.

Id	Name	SBO
s127	C22car_ims	

Modifiers

Table 362: Properties of each modifier.

Id	Name	SBO
s122	CAC	
s127	C22car_ims	

Product

Table 363: Properties of each product.

Id	Name	SBO
s367	C22car_ims	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{90} = [\text{s127}] \cdot \text{k1} \tag{180}$$

Table 364: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.91 Reaction re168

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\text{s135} \xrightarrow{\text{s122, s135}} \text{s368} \tag{181}$$

Reactant

Table 365: Properties of each reactant.

Id	Name	SBO
s135	C14car_ims	

Modifiers

Table 366: Properties of each modifier.

Id	Name	SBO
s122	CAC	
s135	C14car_ims	

Product

Table 367: Properties of each product.

Id	Name	SBO
s368	C14car_ims	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{91} = [\text{s135}] \cdot \text{k1} \tag{182}$$

Table 368: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.92 Reaction re167

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\text{s133} \xrightarrow{\text{s122, s133}} \text{s369} \tag{183}$$

Reactant

Table 369: Properties of each reactant.

Id	Name	SBO
s133	C16car_ims	

Modifiers

Table 370: Properties of each modifier.

Id	Name	SBO
s122	CAC	
s133	C16car_ims	

Product

Table 371: Properties of each product.

Id	Name	SBO
s369	C16car_ims	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{92} = [\text{s133}] \cdot \text{k1} \tag{184}$$

Table 372: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.93 Reaction re166

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\text{s131} \xrightarrow{\text{s122, s131}} \text{s370} \tag{185}$$

Reactant

Table 373: Properties of each reactant.

Id	Name	SBO
s131	C18car_ims	

Modifiers

Table 374: Properties of each modifier.

Id	Name	SBO
s122	CAC	
s131	C18car_ims	

Product

Table 375: Properties of each product.

Id	Name	SBO
s370	C18car_ims	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{93} = [\text{s131}] \cdot \text{k1} \tag{186}$$

Table 376: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.94 Reaction re165

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\text{s129} \xrightarrow{\text{s122, s129}} \text{s371} \tag{187}$$

Reactant

Table 377: Properties of each reactant.

Id	Name	SBO
s129	C20car_ims	

Modifiers

Table 378: Properties of each modifier.

Id	Name	SBO
s122	CAC	
s129	C20car_ims	

Product

Table 379: Properties of each product.

Id	Name	SBO
s371	C20car_ims	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{94} = [\text{s129}] \cdot \text{k1} \tag{188}$$

Table 380: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.95 Reaction re159

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\text{s125} + \text{s126} \xrightarrow{\text{s123, s125, s126}} \text{s127} + \text{s238} \tag{189}$$

Reactants

Table 381: Properties of each reactant.

Id	Name	SBO
s125	C22 AcylCoA_cyt	
s126	Carnitine_cyt	

Modifiers

Table 382: Properties of each modifier.

Id	Name	SBO
s123	Creatine	
s125	C22 AcylCoA_cyt	
s126	Carnitine_cyt	

Products

Table 383: Properties of each product.

Id	Name	SBO
s127	C22car_ims	
s238	CoA-SH	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{95} = [\mathrm{s125}] \cdot [\mathrm{s126}] \cdot \mathrm{k1} \tag{190}$$

Table 384: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.96 Reaction re160

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\mathrm{s128} + \mathrm{s126} \xrightarrow{\mathrm{s123,\ s128,\ s126}} \mathrm{s129} + \mathrm{s238} \tag{191}$$

Reactants

Table 385: Properties of each reactant.

Id	Name	SBO
s128	C20 AcylCoA_cyt	
s126	Carnitine_cyt	

Modifiers

Table 386: Properties of each modifier.

Id	Name	SBO
s123	Creatine	
s128	C20 AcylCoA_cyt	
s126	Carnitine_cyt	

Products

Table 387: Properties of each product.

Id	Name	SBO
s129	C20car_ims	
s238	CoA-SH	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{96} = [\mathrm{s128}] \cdot [\mathrm{s126}] \cdot \mathrm{k1} \tag{192}$$

Table 388: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.97 Reaction re161

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\mathrm{s130} + \mathrm{s126} \xrightarrow{\mathrm{s123,\ s130,\ s126}} \mathrm{s131} + \mathrm{s238} \tag{193}$$

Reactants

Table 389: Properties of each reactant.

Id	Name	SBO
s130	C18 AcylCoA_cyt	
s126	Carnitine_cyt	

Modifiers

Table 390: Properties of each modifier.

Id	Name	SBO
s123	Creatine	

Id	Name	SBO
s130	C18 AcylCoA_cyt	
s126	Carnitine_cyt	

Products

Table 391: Properties of each product.

Id	Name	SBO
s131	C18car_ims	
s238	CoA-SH	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{97} = [\mathrm{s130}] \cdot [\mathrm{s126}] \cdot \mathrm{k1} \tag{194}$$

Table 392: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.98 Reaction re162

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\mathrm{s132} + \mathrm{s126} \xrightarrow{\mathrm{s123,\ s132,\ s126}} \mathrm{s133} + \mathrm{s238} \tag{195}$$

Reactants

Table 393: Properties of each reactant.

Id	Name	SBO
s132	C16 AcylCoA_cyt	
s126	Carnitine_cyt	

Modifiers

Table 394: Properties of each modifier.

Id	Name	SBO
s123	Creatine	
s132	C16 AcylCoA_cyt	
s126	Carnitine_cyt	

Products

Table 395: Properties of each product.

Id	Name	SBO
s133	C16car_ims	
s238	CoA-SH	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{98} = [\mathrm{s132}] \cdot [\mathrm{s126}] \cdot \mathrm{k1} \tag{196}$$

Table 396: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.99 Reaction re163

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\mathrm{s134} + \mathrm{s126} \xrightarrow{\mathrm{s123,\ s134,\ s126}} \mathrm{s135} + \mathrm{s238} \tag{197}$$

Reactants

Table 397: Properties of each reactant.

Id	Name	SBO
s134	C14 AcylCoA_cyt	
s126	Carnitine_cyt	

Modifiers

Table 398: Properties of each modifier.

Id	Name	SBO
s123	Creatine	
s134	C14 AcylCoA_cyt	
s126	Carnitine_cyt	

Products

Table 399: Properties of each product.

Id	Name	SBO
s135	C14car_ims	
s238	CoA-SH	

Kinetic Law

Derived unit $\mathrm{mol}^3 \cdot \mathrm{l}^{-2}$

$$v_{99} = [\mathrm{s134}] \cdot [\mathrm{s126}] \cdot \mathrm{k1} \tag{198}$$

Table 400: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.100 Reaction re169

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\text{s367} \xrightarrow{\text{s124, s367}} \text{s15} + \text{s136} \tag{199}$$

Reactant

Table 401: Properties of each reactant.

Id	Name	SBO
s367	C22car_ims	

Modifiers

Table 402: Properties of each modifier.

Id	Name	SBO
s124	Creatine phosphate	
s367	C22car_ims	

Products

Table 403: Properties of each product.

Id	Name	SBO
s15	C22Acyl-CoA	
s136	car_mat	

Kinetic Law

Derived unit $\text{mol}^2 \cdot \text{l}^{-1}$

$$v_{100} = [\text{s367}] \cdot \text{k1} \tag{200}$$

Table 404: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.101 Reaction re170

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s371} \xrightarrow{\mathrm{s124,\ s371}} \mathrm{s42} + \mathrm{s136} \tag{201}$$

Reactant

Table 405: Properties of each reactant.

Id	Name	SBO
s371	C20car_ims	

Modifiers

Table 406: Properties of each modifier.

Id	Name	SBO
s124	Creatine phosphate	
s371	C20car_ims	

Products

Table 407: Properties of each product.

Id	Name	SBO
s42	C20Acyl-CoA	
s136	car_mat	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{101} = [\mathrm{s371}] \cdot \mathrm{k1} \tag{202}$$

Table 408: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.102 Reaction re171

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s370} \xrightarrow{\mathrm{s124,\ s370}} \mathrm{s65} + \mathrm{s136} \tag{203}$$

Reactant

Table 409: Properties of each reactant.

Id	Name	SBO
s370	C18car_ims	

Modifiers

Table 410: Properties of each modifier.

Id	Name	SBO
s124	Creatine phosphate	
s370	C18car_ims	

Products

Table 411: Properties of each product.

Id	Name	SBO
s65	C18Acyl-CoA	
s136	car_mat	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{102} = [\mathrm{s370}] \cdot \mathrm{k1} \tag{204}$$

Table 412: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.103 Reaction re172

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s369} \xrightarrow{\mathrm{s124,\ s369}} \mathrm{s83} + \mathrm{s136} \tag{205}$$

Reactant

Table 413: Properties of each reactant.

Id	Name	SBO
s369	C16car_ims	

Modifiers

Table 414: Properties of each modifier.

Id	Name	SBO
s124	Creatine phosphate	
s369	C16car_ims	

Products

Table 415: Properties of each product.

Id	Name	SBO
s83	C16Acyl-CoA	
s136	car_mat	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{103} = [\mathrm{s369}] \cdot \mathrm{k1} \tag{206}$$

Table 416: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.104 Reaction re173

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s368} \xrightarrow{\mathrm{s124},\ \mathrm{s368}} \mathrm{s84} + \mathrm{s136} \tag{207}$$

Reactant

Table 417: Properties of each reactant.

Id	Name	SBO
s368	C14car_ims	

Modifiers

Table 418: Properties of each modifier.

Id	Name	SBO
s124	Creatine phosphate	
s368	C14car_ims	

Products

Table 419: Properties of each product.

Id	Name	SBO
s84	C14Acyl-CoA	
s136	car_mat	

Kinetic Law

Derived unit $\mathrm{mol}^2 \cdot \mathrm{l}^{-1}$

$$v_{104} = [\mathrm{s368}] \cdot \mathrm{k1} \tag{208}$$

Table 420: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		1.0	mol	☑

5.105 Reaction re43

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\mathrm{s234} + \mathrm{s334} \xrightarrow{\mathrm{s186,\ s333,\ s234}} \mathrm{s181} + \mathrm{s185} \tag{209}$$

Reactants

Table 421: Properties of each reactant.

Id	Name	SBO
s234	G6P	
s334	NADP+	

Modifiers

Table 422: Properties of each modifier.

Id	Name	SBO
s186	G6PDehydrogenase	
s333	Mg2+	
s234	G6P	

Products

Table 423: Properties of each product.

Id	Name	SBO
s181	6PGDL	
s185	NADPH	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{105} = \frac{\mathrm{v1} \cdot [\mathrm{s234}]}{\mathrm{k1} + [\mathrm{s234}]} \tag{210}$$

Table 424: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.04	mol	☑

5.106 Reaction re44

This is an irreversible reaction of two reactants forming one product influenced by three modifiers.

Reaction equation

$$\text{s181} + \text{s64} \xrightarrow{\text{s189, s333, s181}} \text{s182} \tag{211}$$

Reactants

Table 425: Properties of each reactant.

Id	Name	SBO
s181	6PGDL	
s64	H2O	

Modifiers

Table 426: Properties of each modifier.

Id	Name	SBO
s189	Lactonase	
s333	Mg2+	
s181	6PGDL	

Product

Table 427: Properties of each product.

Id	Name	SBO
s182	6PGluconate	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{106} = \frac{\mathrm{v1} \cdot [\mathrm{s181}]}{\mathrm{k1} + [\mathrm{s181}]} \tag{212}$$

Table 428: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		18.2	mol	☑

5.107 Reaction re45

This is an irreversible reaction of two reactants forming four products influenced by two modifiers.

Reaction equation

$$\mathrm{s182} + \mathrm{s334} \xrightarrow{\mathrm{s192,\ s182}} \mathrm{s183} + \mathrm{s190} + \mathrm{s329} + \mathrm{s237} \tag{213}$$

Reactants

Table 429: Properties of each reactant.

Id	Name	SBO
s182	6PGluconate	
s334	NADP+	

Modifiers

Table 430: Properties of each modifier.

Id	Name	SBO
s192	6PGluconate dehydrogenase	
s182	6PGluconate	

Products

Table 431: Properties of each product.

Id	Name	SBO
s183	D-Ribulose5P	
s190	NAPDH	
s329	H+	
s237	CO2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{107} = \frac{\mathrm{v1} \cdot [\mathrm{s182}]}{\mathrm{k1} + [\mathrm{s182}]} \tag{214}$$

Table 432: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.000	mol	☑
k1	k1		0.157	mol	☑

5.108 Reaction re46

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

Reaction equation

$$\mathrm{s183} \overset{\mathrm{s193,\ s183}}{\rightleftharpoons} \mathrm{s187} \tag{215}$$

Reactant

Table 433: Properties of each reactant.

Id	Name	SBO
s183	D-Ribulose5P	

Modifiers

Table 434: Properties of each modifier.

Id	Name	SBO
s193	Phosphopentose isomerase	
s183	D-Ribulose5P	

Product

Table 435: Properties of each product.

Id	Name	SBO
s187	Ribose5P	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{108} = \frac{\mathrm{v1} \cdot [\mathrm{s183}]}{\mathrm{k1} + [\mathrm{s183}]} \tag{216}$$

Table 436: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		13.6	mol	☑

5.109 Reaction re47

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

Reaction equation

$$\mathrm{s187} \underset{\text{s194, s187}}{\rightleftharpoons} \mathrm{s188} \tag{217}$$

Reactant

Table 437: Properties of each reactant.

Id	Name	SBO
s187	Ribose5P	

Modifiers

Table 438: Properties of each modifier.

Id	Name	SBO
s194	Epimerase	
s187	Ribose5P	

Product

Table 439: Properties of each product.

Id	Name	SBO
s188	Xylulose5P	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{109} = \frac{\mathrm{v1} \cdot [\mathrm{s187}]}{\mathrm{k1} + [\mathrm{s187}]} \tag{218}$$

Table 440: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		140.0	mol	☑

5.110 Reaction re48

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s195} + \mathrm{s199} \xrightarrow{\mathrm{s201,\ s195}} \mathrm{s335} + \mathrm{s200} \tag{219}$$

Reactants

Table 441: Properties of each reactant.

Id	Name	SBO
s195	G1P	
s199	UDP	

Modifiers

Table 442: Properties of each modifier.

Id	Name	SBO
s201	UDP Glucose Phosphorylase	
s195	G1P	

Products

Table 443: Properties of each product.

Id	Name	SBO
s335	UDP-Glucose	
s200	PPi	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{110} = \frac{\mathrm{v1} \cdot [\mathrm{s195}]}{\mathrm{k1} + [\mathrm{s195}]} \tag{220}$$

Table 444: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.000	mol	☑
k1	k1		0.066	mol	☑

5.111 Reaction re53

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s35} + \mathrm{s244} \xrightarrow{\mathrm{s248,\ s35}} \mathrm{s3} + \mathrm{s247} \tag{221}$$

Reactants

Table 445: Properties of each reactant.

Id	Name	SBO
s35	GA3P	
s244	Sedoheptulase7P	

Modifiers

Table 446: Properties of each modifier.

Id	Name	SBO
s248	Transaldolase	
s35	GA3P	

Products

Table 447: Properties of each product.

Id	Name	SBO
s3	F6P	
s247	Erythrose4P	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{111} = \frac{\mathrm{v1} \cdot [\mathrm{s35}]}{\mathrm{k1} + [\mathrm{s35}]} \tag{222}$$

Table 448: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.13	mol	☑

5.112 Reaction re54

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\text{s234} \xrightarrow{\text{s249, s234}} \text{s195} \tag{223}$$

Reactant

Table 449: Properties of each reactant.

Id	Name	SBO
s234	G6P	

Modifiers

Table 450: Properties of each modifier.

Id	Name	SBO
s249	Phosphogluco mutase	
s234	G6P	

Product

Table 451: Properties of each product.

Id	Name	SBO
s195	G1P	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{112} = \frac{\text{v1} \cdot [\text{s234}]}{\text{k1} + [\text{s234}]} \tag{224}$$

Table 452: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.000	mol	☑

Id	Name	SBO	Value	Unit	Constant
k1	k1		0.045	mol	☑

5.113 Reaction re55

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\text{s198} \xrightarrow{\text{s251, s198}} \text{s195} + \text{s252} \tag{225}$$

Reactant

Table 453: Properties of each reactant.

Id	Name	SBO
s198	Glycogen	

Modifiers

Table 454: Properties of each modifier.

Id	Name	SBO
s251	Glycogen phosphorylase	
s198	Glycogen	

Products

Table 455: Properties of each product.

Id	Name	SBO
s195	G1P	
s252	Limit Dextrin	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{113} = \frac{\text{v1} \cdot [\text{s198}]}{\text{k1} + [\text{s198}]} \tag{226}$$

Table 456: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		0.1	mol	☑

5.114 Reaction re56

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\text{s252} \xrightarrow{\text{s254, s252}} \text{s253} + \text{s71} \tag{227}$$

Reactant

Table 457: Properties of each reactant.

Id	Name	SBO
s252	Limit Dextrin	

Modifiers

Table 458: Properties of each modifier.

Id	Name	SBO
s254	Alpha1,6-Glycosidase	
s252	Limit Dextrin	

Products

Table 459: Properties of each product.

Id	Name	SBO
s253	Unbranched alpha(1,4)polymer	
s71	Glucose	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{114} = \frac{\mathrm{v1} \cdot [\mathrm{s252}]}{\mathrm{k1} + [\mathrm{s252}]} \tag{228}$$

Table 460: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.08	mol	☑

5.115 Reaction re57

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s253} + \mathrm{s63} \xrightarrow{\mathrm{s255,\ s253}} \mathrm{s195} + \mathrm{s46} \tag{229}$$

Reactants

Table 461: Properties of each reactant.

Id	Name	SBO
s253	Unbranched alpha(1,4)polymer	
s63	ATP	

Modifiers

Table 462: Properties of each modifier.

Id	Name	SBO
s255	Glygogen Phosphorylase	
s253	Unbranched alpha(1,4)polymer	

Products

Table 463: Properties of each product.

Id	Name	SBO
s195	G1P	

Id	Name	SBO
s46	ADP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{115} = \frac{\mathrm{v1} \cdot [\mathrm{s253}]}{\mathrm{k1} + [\mathrm{s253}]} \tag{230}$$

Table 464: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		0.1	mol	☑

5.116 Reaction re80

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s284} + \mathrm{s64} \xrightarrow{\mathrm{s283,\ s284}} \mathrm{s71} + \mathrm{s286} \tag{231}$$

Reactants

Table 465: Properties of each reactant.

Id	Name	SBO
s284	Sucrose	
s64	H2O	

Modifiers

Table 466: Properties of each modifier.

Id	Name	SBO
s283	Sucrase	
s284	Sucrose	

Products

Table 467: Properties of each product.

Id	Name	SBO
s71	Glucose	
s286	Fructose	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{116} = \frac{\mathrm{v1} \cdot [\mathrm{s284}]}{\mathrm{k1} + [\mathrm{s284}]} \tag{232}$$

Table 468: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		10.0	mol	☑

5.117 Reaction re79

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s286} + \mathrm{s63} \xrightarrow{\mathrm{s287,\ s286}} \mathrm{s285} + \mathrm{s46} \tag{233}$$

Reactants

Table 469: Properties of each reactant.

Id	Name	SBO
s286	Fructose	
s63	ATP	

Modifiers

Table 470: Properties of each modifier.

Id	Name	SBO
s287	Fructokinase	
s286	Fructose	

Products

Table 471: Properties of each product.

Id	Name	SBO
s285	F1P	
s46	ADP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{117} = \frac{\mathrm{v1} \cdot [\mathrm{s286}]}{\mathrm{k1} + [\mathrm{s286}]} \tag{234}$$

Table 472: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.58	mol	☑

5.118 Reaction re83

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s285} \xrightarrow{\mathrm{s291,\ s285}} \mathrm{s82} + \mathrm{s293} \tag{235}$$

Reactant

Table 473: Properties of each reactant.

Id	Name	SBO
s285	F1P	

Modifiers

Table 474: Properties of each modifier.

Id	Name	SBO
s291	Aldolase	
s285	F1P	

Products

Table 475: Properties of each product.

Id	Name	SBO
s82	DHAP	
s293	Glyceraldehyde	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{118} = \frac{\mathrm{v1} \cdot [\mathrm{s285}]}{\mathrm{k1} + [\mathrm{s285}]} \tag{236}$$

Table 476: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		1.7	mol	☑

5.119 Reaction re84

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s293} + \mathrm{s63} \xrightarrow{\mathrm{s294,\ s293}} \mathrm{s35} + \mathrm{s46} \tag{237}$$

Reactants

Table 477: Properties of each reactant.

Id	Name	SBO
s293	Glyceraldehyde	
s63	ATP	

Modifiers

Table 478: Properties of each modifier.

Id	Name	SBO
s294	Triokinase	
s293	Glyceraldehyde	

Products

Table 479: Properties of each product.

Id	Name	SBO
s35	GA3P	
s46	ADP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{119} = \frac{\mathrm{v1} \cdot [\mathrm{s293}]}{\mathrm{k1} + [\mathrm{s293}]} \tag{238}$$

Table 480: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.31	mol	☑

5.120 Reaction re87

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s297} + \mathrm{s64} \xrightarrow{\mathrm{s298,\ s297}} \mathrm{s71} \tag{239}$$

Reactants

Table 481: Properties of each reactant.

Id	Name	SBO
s297	Trehalose	
s64	H2O	

Modifiers

Table 482: Properties of each modifier.

Id	Name	SBO
s298	Trehalase	
s297	Trehalose	

Product

Table 483: Properties of each product.

Id	Name	SBO
s71	Glucose	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{120} = \frac{\mathrm{v1} \cdot [\mathrm{s297}]}{\mathrm{k1} + [\mathrm{s297}]} \tag{240}$$

Table 484: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		1.37	mol	☑

5.121 Reaction re88

This is an irreversible reaction of two reactants forming two products influenced by three modifiers.

Reaction equation

$$\text{s306} + \text{s63} \xrightarrow{\text{s305, s333, s306}} \text{s302} + \text{s46} \tag{241}$$

Reactants

Table 485: Properties of each reactant.

Id	Name	SBO
s306	Galactose	
s63	ATP	

Modifiers

Table 486: Properties of each modifier.

Id	Name	SBO
s305	Galactokinase	
s333	Mg2+	
s306	Galactose	

Products

Table 487: Properties of each product.

Id	Name	SBO
s302	Galactose1P	
s46	ADP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{121} = \frac{\mathrm{v1} \cdot [\mathrm{s306}]}{\mathrm{k1} + [\mathrm{s306}]} \tag{242}$$

Table 488: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		970.0	mol	☑

5.122 Reaction re91

This is an irreversible reaction of one reactant forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s335} \xrightarrow{\mathrm{s308,\ s335}} \mathrm{s195} \tag{243}$$

Reactant

Table 489: Properties of each reactant.

Id	Name	SBO
s335	UDP-Glucose	

Modifiers

Table 490: Properties of each modifier.

Id	Name	SBO
s308	UDP-galactose1phosphate uridylyl transferase	
s335	UDP-Glucose	

Product

Table 491: Properties of each product.

Id	Name	SBO
s195	G1P	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{122} = \frac{\text{v1} \cdot [\text{s335}]}{\text{k1} + [\text{s335}]} \tag{244}$$

Table 492: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.13	mol	☑

5.123 Reaction re92

This is an irreversible reaction of three reactants forming two products influenced by two modifiers.

Reaction equation

$$\text{s321} + \text{s326} + \text{s347} \xrightarrow{\text{s327, s321}} \text{s322} + \text{s350} \tag{245}$$

Reactants

Table 493: Properties of each reactant.

Id	Name	SBO
s321	AcetoacetylCoA	
s326	AcetylCoA	
s347	H2O	

Modifiers

Table 494: Properties of each modifier.

Id	Name	SBO
s327	HMG-CoA Synthase	
s321	AcetoacetylCoA	

Products

Table 495: Properties of each product.

Id	Name	SBO
s322	HMGCoA	
s350	CoA-SH	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{123} = \frac{\mathrm{v1} \cdot [\mathrm{s321}]}{\mathrm{k1} + [\mathrm{s321}]} \tag{246}$$

Table 496: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		294.0	mol	☑

5.124 Reaction re94

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s323} \xrightarrow{\mathrm{s328,\ s323}} \mathrm{s324} + \mathrm{s349} \tag{247}$$

Reactant

Table 497: Properties of each reactant.

Id	Name	SBO
s323	Acetoacetate	

Modifiers

Table 498: Properties of each modifier.

Id	Name	SBO
s328	Acetoacetate Decarboxylase	
s323	Acetoacetate	

Products

Table 499: Properties of each product.

Id	Name	SBO
s324	Acetone	
s349	CO2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{124} = \frac{\mathrm{v1} \cdot [\mathrm{s323}]}{\mathrm{k1} + [\mathrm{s323}]} \tag{248}$$

Table 500: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		1.28	mol	☑

5.125 Reaction re95

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

Reaction equation

$$\mathrm{s323} + \mathrm{s351} + \mathrm{s361} \xrightleftharpoons{\mathrm{s330,\ s323}} \mathrm{s325} + \mathrm{s355} \tag{249}$$

Reactants

Table 501: Properties of each reactant.

Id	Name	SBO
s323	Acetoacetate	
s351	NADH	
s361	H+	

Modifiers

Table 502: Properties of each modifier.

Id	Name	SBO
s330	D Betahydroxybutyrate dehydrogenase	
s323	Acetoacetate	

Products

Table 503: Properties of each product.

Id	Name	SBO
s325	D-Beta-Hydroxybutyrate	
s355	NAD+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{125} = \frac{\mathrm{v1} \cdot [\mathrm{s323}]}{\mathrm{k1} + [\mathrm{s323}]} \tag{250}$$

Table 504: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		12.6	mol	☑

5.126 Reaction re98

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s323} + \mathrm{s6} \xrightarrow{\mathrm{s332,\ s323}} \mathrm{s321} + \mathrm{s7} \tag{251}$$

Reactants

Table 505: Properties of each reactant.

Id	Name	SBO
s323	Acetoacetate	
s6	S CoA	

Modifiers

Table 506: Properties of each modifier.

Id	Name	SBO
s332	Beta-KetoacylCoA dehydrogenase	
s323	Acetoacetate	

Products

Table 507: Properties of each product.

Id	Name	SBO
s321	AcetoacetylCoA	
s7	Succinate	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{126} = \frac{\mathrm{v1} \cdot [\mathrm{s323}]}{\mathrm{k1} + [\mathrm{s323}]} \tag{252}$$

Table 508: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		18.7	mol	☑

5.127 Reaction re50

This is an irreversible reaction of one reactant forming one product influenced by five modifiers.

Reaction equation

$$\text{s197} \xrightarrow{\text{s336, s203, s336, s250, s197}} \text{s198} \tag{253}$$

Reactant

Table 509: Properties of each reactant.

Id	Name	SBO
s197	Glycogen Primer	

Modifiers

Table 510: Properties of each modifier.

Id	Name	SBO
s336	Glycogen Synthase	
s203	Glycosyl transferase	
s336	Glycogen Synthase	
s250	Glycosyl-4,6-Transferase	
s197	Glycogen Primer	

Product

Table 511: Properties of each product.

Id	Name	SBO
s198	Glycogen	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{127} = \frac{\mathrm{v1} \cdot [\mathrm{s197}]}{\mathrm{k1} + [\mathrm{s197}]} \tag{254}$$

Table 512: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.08	mol	☑

5.128 Reaction re52

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s188} + \mathrm{s247} \xrightarrow{\mathrm{s337,\ s188}} \mathrm{s3} + \mathrm{s35} \tag{255}$$

Reactants

Table 513: Properties of each reactant.

Id	Name	SBO
s188	Xylulose5P	
s247	Erythrose4P	

Modifiers

Table 514: Properties of each modifier.

Id	Name	SBO
s337	Transketolase	
s188	Xylulose5P	

Products

Table 515: Properties of each product.

Id	Name	SBO
s3	F6P	
s35	GA3P	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{128} = \frac{\mathrm{v1} \cdot [\mathrm{s188}]}{\mathrm{k1} + [\mathrm{s188}]} \tag{256}$$

Table 516: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.19	mol	☑

5.129 Reaction re51

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s188} + \mathrm{s187} \xrightarrow{\mathrm{s337,\ s188}} \mathrm{s35} + \mathrm{s244} \tag{257}$$

Reactants

Table 517: Properties of each reactant.

Id	Name	SBO
s188	Xylulose5P	
s187	Ribose5P	

Modifiers

Table 518: Properties of each modifier.

Id	Name	SBO
s337	Transketolase	
s188	Xylulose5P	

Products

Table 519: Properties of each product.

Id	Name	SBO
s35	GA3P	
s244	Sedoheptulase7P	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{129} = \frac{\mathrm{v1} \cdot [\mathrm{s188}]}{\mathrm{k1} + [\mathrm{s188}]} \tag{258}$$

Table 520: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		0.19	mol	☑

5.130 Reaction re16

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

Reaction equation

$$\mathrm{s2} \xrightleftharpoons{\mathrm{s354,\ s2}} \mathrm{s4} + \mathrm{s347} \tag{259}$$

Reactant

Table 521: Properties of each reactant.

Id	Name	SBO
s2	Citrate	

Modifiers

Table 522: Properties of each modifier.

Id	Name	SBO
s354	Aconitase	
s2	Citrate	

Products

Table 523: Properties of each product.

Id	Name	SBO
s4	cis-Aconitate	
s347	H2O	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{130} = \frac{\mathrm{v1} \cdot [\mathrm{s2}]}{\mathrm{k1} + [\mathrm{s2}]} \tag{260}$$

Table 524: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		2900.0	mol	☑

5.131 Reaction re17

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

Reaction equation

$$\mathrm{s4} + \mathrm{s347} \xrightleftharpoons{\mathrm{s354,\ s4}} \mathrm{s52} \tag{261}$$

Reactants

Table 525: Properties of each reactant.

Id	Name	SBO
s4	cis-Aconitate	
s347	H2O	

Modifiers

Table 526: Properties of each modifier.

Id	Name	SBO
s354	Aconitase	
s4	cis-Aconitate	

Product

Table 527: Properties of each product.

Id	Name	SBO
s52	Isocitrate	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{131} = \frac{\mathrm{v1} \cdot [\mathrm{s4}]}{\mathrm{k1} + [\mathrm{s4}]} \tag{262}$$

Table 528: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		2900.0	mol	☑

5.132 Reaction re113

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s37} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s37}} \mathrm{s42} \tag{263}$$

Reactants

Table 529: Properties of each reactant.

Id	Name	SBO
s37	C22 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 530: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s37	C22 Ketoacyl-CoA	

Product

Table 531: Properties of each product.

Id	Name	SBO
s42	C20Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{132} = \frac{\mathrm{v1} \cdot [\mathrm{s37}]}{\mathrm{k1} + [\mathrm{s37}]} \tag{264}$$

Table 532: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.133 Reaction re116

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s66} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s66}} \mathrm{s65} \tag{265}$$

Reactants

Table 533: Properties of each reactant.

Id	Name	SBO
s66	C20 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 534: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s66	C20 Ketoacyl-CoA	

Product

Table 535: Properties of each product.

Id	Name	SBO
s65	C18Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{133} = \frac{\mathrm{v1} \cdot [\mathrm{s66}]}{\mathrm{k1} + [\mathrm{s66}]} \tag{266}$$

Table 536: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.134 Reaction re120

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s80} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s80}} \mathrm{s83} \tag{267}$$

Reactants

Table 537: Properties of each reactant.

Id	Name	SBO
s80	C18 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 538: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s80	C18 Ketoacyl-CoA	

Product

Table 539: Properties of each product.

Id	Name	SBO
s83	C16Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{134} = \frac{\mathrm{v1} \cdot [\mathrm{s80}]}{\mathrm{k1} + [\mathrm{s80}]} \tag{268}$$

Table 540: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.135 Reaction re123

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s89} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s89}} \mathrm{s84} \tag{269}$$

Reactants

Table 541: Properties of each reactant.

Id	Name	SBO
s89	C16 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 542: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s89	C16 Ketoacyl-CoA	

Product

Table 543: Properties of each product.

Id	Name	SBO
s84	C14Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{135} = \frac{\mathrm{v1} \cdot [\mathrm{s89}]}{\mathrm{k1} + [\mathrm{s89}]} \tag{270}$$

Table 544: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.136 Reaction re128

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s100} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s100}} \mathrm{s101} \tag{271}$$

Reactants

Table 545: Properties of each reactant.

Id	Name	SBO
s100	C14 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 546: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	

Id	Name	SBO
s100	C14 Ketoacyl-CoA	

Product

Table 547: Properties of each product.

Id	Name	SBO
s101	C12Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{136} = \frac{\mathrm{v1} \cdot [\mathrm{s100}]}{\mathrm{k1} + [\mathrm{s100}]} \tag{272}$$

Table 548: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.137 Reaction re131

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s103} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s103}} \mathrm{s102} \tag{273}$$

Reactants

Table 549: Properties of each reactant.

Id	Name	SBO
s103	C12 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 550: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s103	C12 Ketoacyl-CoA	

Product

Table 551: Properties of each product.

Id	Name	SBO
s102	C10Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{137} = \frac{\mathrm{v1} \cdot [\mathrm{s103}]}{\mathrm{k1} + [\mathrm{s103}]} \tag{274}$$

Table 552: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.138 Reaction re135

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s108} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s108}} \mathrm{s109} \tag{275}$$

Reactants

Table 553: Properties of each reactant.

Id	Name	SBO
s108	C10 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 554: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s108	C10 Ketoacyl-CoA	

Product

Table 555: Properties of each product.

Id	Name	SBO
s109	C8Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{138} = \frac{\mathrm{v1} \cdot [\mathrm{s108}]}{\mathrm{k1} + [\mathrm{s108}]} \tag{276}$$

Table 556: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.139 Reaction re138

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s111} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s111}} \mathrm{s110} \tag{277}$$

Reactants

Table 557: Properties of each reactant.

Id	Name	SBO
s111	C8 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 558: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s111	C8 Ketoacyl-CoA	

Product

Table 559: Properties of each product.

Id	Name	SBO
s110	C6Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{139} = \frac{\mathrm{v2} \cdot [\mathrm{s111}]}{\mathrm{k2} + [\mathrm{s111}]} \tag{278}$$

Table 560: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑
v2	v2		1.0	mol	☑
k2	k2		16.0	mol	☑

5.140 Reaction re144

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s116} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s116}} \mathrm{s117} \tag{279}$$

Reactants

Table 561: Properties of each reactant.

Id	Name	SBO
s116	C6 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 562: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s116	C6 Ketoacyl-CoA	

Product

Table 563: Properties of each product.

Id	Name	SBO
s117	C4Acyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{140} = \frac{\mathrm{v1} \cdot [\mathrm{s116}]}{\mathrm{k1} + [\mathrm{s116}]} \tag{280}$$

Table 564: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.141 Reaction re97

This is an irreversible reaction of one reactant forming two products influenced by two modifiers.

Reaction equation

$$\text{s348} \xrightarrow{\text{s362, s348}} \text{s321} + \text{s350} \tag{281}$$

Reactant

Table 565: Properties of each reactant.

Id	Name	SBO
s348	A CoA	

Modifiers

Table 566: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s348	A CoA	

Products

Table 567: Properties of each product.

Id	Name	SBO
s321	AcetoacetylCoA	
s350	CoA-SH	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{141} = \frac{\mathrm{v1} \cdot [\mathrm{s348}]}{\mathrm{k1} + [\mathrm{s348}]} \tag{282}$$

Table 568: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.142 Reaction re96

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s321} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s321}} \mathrm{s348} \tag{283}$$

Reactants

Table 569: Properties of each reactant.

Id	Name	SBO
s321	AcetoacetylCoA	
s350	CoA-SH	

Modifiers

Table 570: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s321	AcetoacetylCoA	

Product

Table 571: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{142} = \frac{\mathrm{v1} \cdot [\mathrm{s321}]}{\mathrm{k1} + [\mathrm{s321}]} \tag{284}$$

Table 572: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.143 Reaction re147

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s119} + \mathrm{s350} \xrightarrow{\mathrm{s362,\ s119}} \mathrm{s348} \tag{285}$$

Reactants

Table 573: Properties of each reactant.

Id	Name	SBO
s119	C4 Ketoacyl-CoA	
s350	CoA-SH	

Modifiers

Table 574: Properties of each modifier.

Id	Name	SBO
s362	Thiolase	
s119	C4 Ketoacyl-CoA	

Product

Table 575: Properties of each product.

Id	Name	SBO
s348	A CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{143} = \frac{\mathrm{v1} \cdot [\mathrm{s119}]}{\mathrm{k1} + [\mathrm{s119}]} \tag{286}$$

Table 576: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		16.0	mol	☑

5.144 Reaction re110

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s15} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s15}} \mathrm{s19} + \mathrm{s353} \tag{287}$$

Reactants

Table 577: Properties of each reactant.

Id	Name	SBO
s15	C22Acyl-CoA	
s356	FAD	

Modifiers

Table 578: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s15	C22Acyl-CoA	

Products

Table 579: Properties of each product.

Id	Name	SBO
s19	C22 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{144} = \frac{\mathrm{v1} \cdot [\mathrm{s15}]}{\mathrm{k1} + [\mathrm{s15}]} \tag{288}$$

Table 580: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.145 Reaction re117

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s42} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s42}} \mathrm{s69} + \mathrm{s353} \tag{289}$$

Reactants

Table 581: Properties of each reactant.

Id	Name	SBO
s42	C20Acyl-CoA	
s356	FAD	

Modifiers

Table 582: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s42	C20Acyl-CoA	

Products

Table 583: Properties of each product.

Id	Name	SBO
s69	C20 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{145} = \frac{\mathrm{v1} \cdot [\mathrm{s42}]}{\mathrm{k1} + [\mathrm{s42}]} \tag{290}$$

Table 584: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.146 Reaction re125

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s65} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s65}} \mathrm{s70} + \mathrm{s353} \tag{291}$$

Reactants

Table 585: Properties of each reactant.

Id	Name	SBO
s65	C18Acyl-CoA	
s356	FAD	

Modifiers

Table 586: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s65	C18Acyl-CoA	

Products

Table 587: Properties of each product.

Id	Name	SBO
s70	C18 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{146} = \frac{\mathrm{v1} \cdot [\mathrm{s65}]}{\mathrm{k1} + [\mathrm{s65}]} \tag{292}$$

Table 588: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.147 Reaction re124

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s83} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s83}} \mathrm{s97} + \mathrm{s353} \tag{293}$$

Reactants

Table 589: Properties of each reactant.

Id	Name	SBO
s83	C16Acyl-CoA	
s356	FAD	

Modifiers

Table 590: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s83	C16Acyl-CoA	

Products

Table 591: Properties of each product.

Id	Name	SBO
s97	C16 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{147} = \frac{\mathrm{v1} \cdot [\mathrm{s83}]}{\mathrm{k1} + [\mathrm{s83}]} \tag{294}$$

Table 592: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.148 Reaction re141

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s84} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s84}} \mathrm{s98} + \mathrm{s353} \tag{295}$$

Reactants

Table 593: Properties of each reactant.

Id	Name	SBO
s84	C14Acyl-CoA	
s356	FAD	

Modifiers

Table 594: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s84	C14Acyl-CoA	

Products

Table 595: Properties of each product.

Id	Name	SBO
s98	C14 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{148} = \frac{\mathrm{v1} \cdot [\mathrm{s84}]}{\mathrm{k1} + [\mathrm{s84}]} \tag{296}$$

Table 596: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.149 Reaction re132

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s101} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s101}} \mathrm{s105} + \mathrm{s353} \tag{297}$$

Reactants

Table 597: Properties of each reactant.

Id	Name	SBO
s101	C12Acyl-CoA	
s356	FAD	

Modifiers

Table 598: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s101	C12Acyl-CoA	

Products

Table 599: Properties of each product.

Id	Name	SBO
s105	C12 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\text{mol} \cdot \text{l}^{-1}$

$$v_{149} = \frac{\text{v1} \cdot [\text{s101}]}{\text{k1} + [\text{s101}]} \tag{298}$$

Table 600: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.150 Reaction re140

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\text{s102} + \text{s356} \xrightarrow{\text{s364, s102}} \text{s106} + \text{s353} \tag{299}$$

Reactants

Table 601: Properties of each reactant.

Id	Name	SBO
s102	C10Acyl-CoA	
s356	FAD	

Modifiers

Table 602: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s102	C10Acyl-CoA	

Products

Table 603: Properties of each product.

Id	Name	SBO
s106	C10 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{150} = \frac{\mathrm{v1} \cdot [\mathrm{s102}]}{\mathrm{k1} + [\mathrm{s102}]} \tag{300}$$

Table 604: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.151 Reaction re139

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s109} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s109}} \mathrm{s113} + \mathrm{s353} \tag{301}$$

Reactants

Table 605: Properties of each reactant.

Id	Name	SBO
s109	C8Acyl-CoA	
s356	FAD	

Modifiers

Table 606: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s109	C8Acyl-CoA	

Products

Table 607: Properties of each product.

Id	Name	SBO
s113	C8 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{151} = \frac{\mathrm{v1} \cdot [\mathrm{s109}]}{\mathrm{k1} + [\mathrm{s109}]} \tag{302}$$

Table 608: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.152 Reaction re149

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s110} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s110}} \mathrm{s114} + \mathrm{s353} \tag{303}$$

Reactants

Table 609: Properties of each reactant.

Id	Name	SBO
s110	C6Acyl-CoA	
s356	FAD	

Modifiers

Table 610: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s110	C6Acyl-CoA	

Products

Table 611: Properties of each product.

Id	Name	SBO
s114	C6 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{152} = \frac{\mathrm{v1} \cdot [\mathrm{s110}]}{\mathrm{k1} + [\mathrm{s110}]} \tag{304}$$

Table 612: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.153 Reaction re148

This is an irreversible reaction of two reactants forming two products influenced by two modifiers.

Reaction equation

$$\mathrm{s117} + \mathrm{s356} \xrightarrow{\mathrm{s364,\ s117}} \mathrm{s121} + \mathrm{s353} \tag{305}$$

Reactants

Table 613: Properties of each reactant.

Id	Name	SBO
s117	C4Acyl-CoA	
s356	FAD	

Modifiers

Table 614: Properties of each modifier.

Id	Name	SBO
s364	Acyl-CoA dehydrogenase	
s117	C4Acyl-CoA	

Products

Table 615: Properties of each product.

Id	Name	SBO
s121	C4 2-trans-enoyl-CoA	
s353	FADH2	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{153} = \frac{\mathrm{v1} \cdot [\mathrm{s117}]}{\mathrm{k1} + [\mathrm{s117}]} \tag{306}$$

Table 616: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		3.0	mol	☑

5.154 Reaction re111

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s19} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s19}} \mathrm{s22} \tag{307}$$

Reactants

Table 617: Properties of each reactant.

Id	Name	SBO
s19	C22 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 618: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s19	C22 2-trans-enoyl-CoA	

Product

Table 619: Properties of each product.

Id	Name	SBO
s22	C22 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{154} = \frac{\mathrm{v1} \cdot [\mathrm{s19}]}{\mathrm{k1} + [\mathrm{s19}]} \tag{308}$$

Table 620: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.155 Reaction re114

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s69} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s69}} \mathrm{s68} \tag{309}$$

Reactants

Table 621: Properties of each reactant.

Id	Name	SBO
s69	C20 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 622: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s69	C20 2-trans-enoyl-CoA	

Product

Table 623: Properties of each product.

Id	Name	SBO
s68	C20 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{155} = \frac{\mathrm{v1} \cdot [\mathrm{s69}]}{\mathrm{k1} + [\mathrm{s69}]} \tag{310}$$

Table 624: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.156 Reaction re118

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s70} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s70}} \mathrm{s72} \tag{311}$$

Reactants

Table 625: Properties of each reactant.

Id	Name	SBO
s70	C18 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 626: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s70	C18 2-trans-enoyl-CoA	

Product

Table 627: Properties of each product.

Id	Name	SBO
s72	C18 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{156} = \frac{\mathrm{v1} \cdot [\mathrm{s70}]}{\mathrm{k1} + [\mathrm{s70}]} \tag{312}$$

Table 628: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.157 Reaction re121

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s97} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s97}} \mathrm{s96} \tag{313}$$

Reactants

Table 629: Properties of each reactant.

Id	Name	SBO
s97	C16 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 630: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	

Id	Name	SBO
s97	C16 2-trans-enoyl-CoA	

Product

Table 631: Properties of each product.

Id	Name	SBO
s96	C16 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{157} = \frac{\mathrm{v1} \cdot [\mathrm{s97}]}{\mathrm{k1} + [\mathrm{s97}]} \tag{314}$$

Table 632: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.158 Reaction re126

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s98} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s98}} \mathrm{s99} \tag{315}$$

Reactants

Table 633: Properties of each reactant.

Id	Name	SBO
s98	C14 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 634: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s98	C14 2-trans-enoyl-CoA	

Product

Table 635: Properties of each product.

Id	Name	SBO
s99	C14 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{158} = \frac{\mathrm{v1} \cdot [\mathrm{s98}]}{\mathrm{k1} + [\mathrm{s98}]} \tag{316}$$

Table 636: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.159 Reaction re129

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s105} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s105}} \mathrm{s104} \tag{317}$$

Reactants

Table 637: Properties of each reactant.

Id	Name	SBO
s105	C12 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 638: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s105	C12 2-trans-enoyl-CoA	

Product

Table 639: Properties of each product.

Id	Name	SBO
s104	C12 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{159} = \frac{\mathrm{v1} \cdot [\mathrm{s105}]}{\mathrm{k1} + [\mathrm{s105}]} \tag{318}$$

Table 640: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.160 Reaction re133

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s106} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s106}} \mathrm{s107} \tag{319}$$

Reactants

Table 641: Properties of each reactant.

Id	Name	SBO
s106	C10 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 642: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s106	C10 2-trans-enoyl-CoA	

Product

Table 643: Properties of each product.

Id	Name	SBO
s107	C10 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{160} = \frac{\mathrm{v1} \cdot [\mathrm{s106}]}{\mathrm{k1} + [\mathrm{s106}]} \tag{320}$$

Table 644: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.161 Reaction re136

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s113} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s113}} \mathrm{s112} \tag{321}$$

Reactants

Table 645: Properties of each reactant.

Id	Name	SBO
s113	C8 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 646: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s113	C8 2-trans-enoyl-CoA	

Product

Table 647: Properties of each product.

Id	Name	SBO
s112	C8 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{161} = \frac{\mathrm{v1} \cdot [\mathrm{s113}]}{\mathrm{k1} + [\mathrm{s113}]} \tag{322}$$

Table 648: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.162 Reaction re142

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s114} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s114}} \mathrm{s115} \tag{323}$$

Reactants

Table 649: Properties of each reactant.

Id	Name	SBO
s114	C6 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 650: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s114	C6 2-trans-enoyl-CoA	

Product

Table 651: Properties of each product.

Id	Name	SBO
s115	C6 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{162} = \frac{\mathrm{v1} \cdot [\mathrm{s114}]}{\mathrm{k1} + [\mathrm{s114}]} \tag{324}$$

Table 652: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.163 Reaction re145

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s121} + \mathrm{s347} \xrightarrow{\mathrm{s365,\ s121}} \mathrm{s120} \tag{325}$$

Reactants

Table 653: Properties of each reactant.

Id	Name	SBO
s121	C4 2-trans-enoyl-CoA	
s347	H2O	

Modifiers

Table 654: Properties of each modifier.

Id	Name	SBO
s365	Enoyl-CoA hydratase	
s121	C4 2-trans-enoyl-CoA	

Product

Table 655: Properties of each product.

Id	Name	SBO
s120	C4 L-3-hydroxyacyl-CoA	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{163} = \frac{\mathrm{v1} \cdot [\mathrm{s121}]}{\mathrm{k1} + [\mathrm{s121}]} \tag{326}$$

Table 656: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		100.0	mol	☑

5.164 Reaction re112

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s22} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s22}} \mathrm{s37} + \mathrm{s351} + \mathrm{s361} \tag{327}$$

Reactants

Table 657: Properties of each reactant.

Id	Name	SBO
s22	C22 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 658: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s22	C22 L-3-hydroxyacyl-CoA	

Products

Table 659: Properties of each product.

Id	Name	SBO
s37	C22 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{164} = \frac{\mathrm{v1} \cdot [\mathrm{s22}]}{\mathrm{k1} + [\mathrm{s22}]} \tag{328}$$

Table 660: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.165 Reaction re115

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s68} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s68}} \mathrm{s66} + \mathrm{s351} + \mathrm{s361} \tag{329}$$

Reactants

Table 661: Properties of each reactant.

Id	Name	SBO
s68	C20 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 662: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s68	C20 L-3-hydroxyacyl-CoA	

Products

Table 663: Properties of each product.

Id	Name	SBO
s66	C20 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{165} = \frac{\mathrm{v1} \cdot [\mathrm{s68}]}{\mathrm{k1} + [\mathrm{s68}]} \tag{330}$$

Table 664: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.166 Reaction re119

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s72} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s72}} \mathrm{s80} + \mathrm{s351} + \mathrm{s361} \tag{331}$$

Reactants

Table 665: Properties of each reactant.

Id	Name	SBO
s72	C18 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 666: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s72	C18 L-3-hydroxyacyl-CoA	

Products

Table 667: Properties of each product.

Id	Name	SBO
s80	C18 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{166} = \frac{\mathrm{v1} \cdot [\mathrm{s72}]}{\mathrm{k1} + [\mathrm{s72}]} \tag{332}$$

Table 668: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.167 Reaction re122

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s96} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s96}} \mathrm{s89} + \mathrm{s351} + \mathrm{s361} \tag{333}$$

Reactants

Table 669: Properties of each reactant.

Id	Name	SBO
s96	C16 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 670: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s96	C16 L-3-hydroxyacyl-CoA	

Products

Table 671: Properties of each product.

Id	Name	SBO
s89	C16 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{167} = \frac{\mathrm{v1} \cdot [\mathrm{s96}]}{\mathrm{k1} + [\mathrm{s96}]} \tag{334}$$

Table 672: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.168 Reaction re127

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s99} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s99}} \mathrm{s100} + \mathrm{s351} + \mathrm{s361} \tag{335}$$

Reactants

Table 673: Properties of each reactant.

Id	Name	SBO
s99	C14 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 674: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s99	C14 L-3-hydroxyacyl-CoA	

Products

Table 675: Properties of each product.

Id	Name	SBO
s100	C14 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{168} = \frac{\mathrm{v1} \cdot [\mathrm{s99}]}{\mathrm{k1} + [\mathrm{s99}]} \tag{336}$$

Table 676: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.169 Reaction re130

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s104} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s104}} \mathrm{s103} + \mathrm{s351} + \mathrm{s361} \tag{337}$$

Reactants

Table 677: Properties of each reactant.

Id	Name	SBO
s104	C12 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 678: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s104	C12 L-3-hydroxyacyl-CoA	

Products

Table 679: Properties of each product.

Id	Name	SBO
s103	C12 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{169} = \frac{\mathrm{v1} \cdot [\mathrm{s104}]}{\mathrm{k1} + [\mathrm{s104}]} \tag{338}$$

Table 680: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.170 Reaction re134

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s107} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s107}} \mathrm{s108} + \mathrm{s351} + \mathrm{s361} \tag{339}$$

Reactants

Table 681: Properties of each reactant.

Id	Name	SBO
s107	C10 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 682: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s107	C10 L-3-hydroxyacyl-CoA	

Products

Table 683: Properties of each product.

Id	Name	SBO
s108	C10 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{170} = \frac{\mathrm{v1} \cdot [\mathrm{s107}]}{\mathrm{k1} + [\mathrm{s107}]} \tag{340}$$

Table 684: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.171 Reaction re137

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s112} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s112}} \mathrm{s111} + \mathrm{s351} + \mathrm{s361} \tag{341}$$

Reactants

Table 685: Properties of each reactant.

Id	Name	SBO
s112	C8 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 686: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s112	C8 L-3-hydroxyacyl-CoA	

Products

Table 687: Properties of each product.

Id	Name	SBO
s111	C8 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{171} = \frac{\mathrm{v1} \cdot [\mathrm{s112}]}{\mathrm{k1} + [\mathrm{s112}]} \tag{342}$$

Table 688: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.172 Reaction re143

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s115} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s115}} \mathrm{s116} + \mathrm{s351} + \mathrm{s361} \tag{343}$$

Reactants

Table 689: Properties of each reactant.

Id	Name	SBO
s115	C6 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 690: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s115	C6 L-3-hydroxyacyl-CoA	

Products

Table 691: Properties of each product.

Id	Name	SBO
s116	C6 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{172} = \frac{\mathrm{v1} \cdot [\mathrm{s115}]}{\mathrm{k1} + [\mathrm{s115}]} \tag{344}$$

Table 692: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.173 Reaction re146

This is an irreversible reaction of two reactants forming three products influenced by two modifiers.

Reaction equation

$$\mathrm{s120} + \mathrm{s355} \xrightarrow{\mathrm{s366,\ s120}} \mathrm{s119} + \mathrm{s351} + \mathrm{s361} \tag{345}$$

Reactants

Table 693: Properties of each reactant.

Id	Name	SBO
s120	C4 L-3-hydroxyacyl-CoA	
s355	NAD+	

Modifiers

Table 694: Properties of each modifier.

Id	Name	SBO
s366	Beta-hydroxyacyl-CoA dehydrogenase	
s120	C4 L-3-hydroxyacyl-CoA	

Products

Table 695: Properties of each product.

Id	Name	SBO
s119	C4 Ketoacyl-CoA	
s351	NADH	
s361	H+	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{173} = \frac{\mathrm{v1} \cdot [\mathrm{s120}]}{\mathrm{k1} + [\mathrm{s120}]} \tag{346}$$

Table 696: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		34.5	mol	☑

5.174 Reaction re175

This is an irreversible reaction of two reactants forming one product influenced by two modifiers.

Reaction equation

$$\mathrm{s124} + \mathrm{s345} \xrightarrow{\mathrm{s400,\ s124}} \mathrm{s123} \tag{347}$$

Reactants

Table 697: Properties of each reactant.

Id	Name	SBO
s124	Creatine phosphate	
s345	ATP	

Modifiers

Table 698: Properties of each modifier.

Id	Name	SBO
s400	Creatine Kinase	
s124	Creatine phosphate	

Product

Table 699: Properties of each product.

Id	Name	SBO
s123	Creatine	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{174} = \frac{\mathrm{v1} \cdot [\mathrm{s124}]}{\mathrm{k1} + [\mathrm{s124}]} \tag{348}$$

Table 700: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.00	mol	☑
k1	k1		1.16	mol	☑

5.175 Reaction re182

This is an irreversible reaction of one reactant forming two products influenced by one modifier.

Reaction equation

$$\mathrm{s123} \xrightarrow{\mathrm{s123}} \mathrm{s124} + \mathrm{s47} \tag{349}$$

Reactant

Table 701: Properties of each reactant.

Id	Name	SBO
s123	Creatine	

Modifier

Table 702: Properties of each modifier.

Id	Name	SBO
s123	Creatine	

Products

Table 703: Properties of each product.

Id	Name	SBO
s124	Creatine phosphate	
s47	AMP	

Kinetic Law

Derived unit $\mathrm{mol} \cdot \mathrm{l}^{-1}$

$$v_{175} = \frac{\mathrm{v1} \cdot [\mathrm{s123}]}{\mathrm{k1} + [\mathrm{s123}]} \tag{350}$$

Table 704: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v1	v1		1.0	mol	☑
k1	k1		9.6	mol	☑

6 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.

Identifiers for kinetic laws highlighted in gray cannot be verified to evaluate to units of SBML `substance` per `time`. As a result, some SBML interpreters may not be able to verify the consistency of the units on quantities in the model. Please check if

- parameters without an unit definition are involved or
- volume correction is necessary because the `hasOnlySubstanceUnits` flag may be set to `false` and `spacialDimensions`> 0 for certain species.

6.1 Species `s4`

Name cis-Aconitate

Initial concentration $13\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in `re17` and as a product in `re16` and as a modifier in `re17`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s4} = v_{130} - v_{131} \tag{351}$$

6.2 Species `s136`

Name car_mat

Initial concentration $43\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in five reactions (as a product in `re169`, `re170`, `re171`, `re172`, `re173`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s136} = v_{100} + v_{101} + v_{102} + v_{103} + v_{104} \tag{352}$$

6.3 Species s188

Name Xylulose5P

Initial concentration $0.43\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in five reactions (as a reactant in re52, re51 and as a product in re47 and as a modifier in re52, re51).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s188} = v_{109} - v_{128} - v_{129} \tag{353}$$

6.4 Species s253

Name Unbranched alpha(1,4)polymer

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re57 and as a product in re56 and as a modifier in re57).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s253} = v_{114} - v_{115} \tag{354}$$

6.5 Species s49

Name UREA

Initial concentration $6500\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re13).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s49} = v_{35} \tag{355}$$

6.6 Species s308

Name UDP-galactose1phosphate uridylyl transferase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re91).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s308} = 0 \tag{356}$$

6.7 Species s335

Name UDP-Glucose

Initial concentration $155\ \mathrm{mol} \cdot 1^{-1}$

Charge 0

This species takes part in six reactions (as a reactant in re49, re91 and as a product in re89, re48 and as a modifier in re49, re91).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s335} = v_{66} + v_{110} - v_{14} - v_{122} \tag{357}$$

6.8 Species s13

Name UDP glucose4epimerase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re89).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s13} = 0 \tag{358}$$

6.9 Species s201

Name UDP Glucose Phosphorylase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re48).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s201} = 0 \tag{359}$$

6.10 Species s199

Name UDP

Initial concentration $41\ \mathrm{mol} \cdot 1^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re48).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s199} = -v_{110} \tag{360}$$

6.11 Species s294

Name Triokinase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re84).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s294} = 0 \tag{361}$$

6.12 Species s292

Name Triglyceride

Initial concentration $43.2\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re82).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s292} = v_{27} \tag{362}$$

6.13 Species s297

Name Trehalose

Initial concentration $0.056\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in two reactions (as a reactant in re87 and as a modifier in re87).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s297} = -v_{120} \tag{363}$$

6.14 Species s298

Name Trehalase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re87).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s298} = 0 \tag{364}$$

6.15 Species s337

Name Transketolase

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a modifier in re52, re51).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s337} = 0 \tag{365}$$

6.16 Species s248

Name Transaldolase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re53).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s248} = 0 \tag{366}$$

6.17 Species s362

Name Thiolase

Initial amount 0 mol

This species takes part in twelve reactions (as a modifier in re113, re116, re120, re123, re128, re131, re135, re138, re144, re97, re96, re147).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s362} = 0 \tag{367}$$

6.18 Species s94

Name TPP

Initial concentration $0.0032\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s94} = -\,v_{89} \tag{368}$$

6.19 Species s284

Name Sucrose

Initial concentration $1.8\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in two reactions (as a reactant in re80 and as a modifier in re80).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s284} = -\ v_{116} \tag{369}$$

6.20 Species s283

Name Sucrase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re80).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s283} = 0 \tag{370}$$

6.21 Species s26

Name Succinate dehydrogenase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re20).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s26} = 0 \tag{371}$$

6.22 Species s7

Name Succinate

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a reactant in re20 and as a product in re19, re98 and as a modifier in re20).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s7} = v_{81} + v_{126} - v_{70} \tag{372}$$

6.23 Species s244

Name Sedoheptulase7P

Initial concentration $0.89\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in two reactions (as a reactant in re53 and as a product in re51).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s244} = v_{129} - v_{111} \tag{373}$$

6.24 Species s58

Name S CoA synthase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re19).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s58} = 0 \tag{374}$$

6.25 Species s6

Name S CoA

Initial concentration $20\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re19, re98 and as a product in re18 and as a modifier in re19).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s6} = v_{80} - v_{81} - v_{126} \tag{375}$$

6.26 Species s187

Name Ribose5P

Initial concentration $13.2\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re47, re51 and as a product in re46 and as a modifier in re47).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s187} = v_{108} - v_{109} - v_{129} \tag{376}$$

6.27 Species s388

Name QH2

Initial concentration 7.4 mol · l^{-1}

Charge 0

This species takes part in ten reactions (as a reactant in re65, re61, re73, re74 and as a product in re60, re64 and as a modifier in re65, re61, re73, re74).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s388} = v_{61} + v_{62} - v_{22} - v_{23} - v_{64} - v_{65} \tag{377}$$

6.28 Species s267

Name Q

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a reactant in re60 and as a product in re69, re59 and as a modifier in re60).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s267} = v_{24} + v_{25} - v_{61} \tag{378}$$

6.29 Species s11

Name Pyruvate

Initial concentration 64 mol · l^{-1}

Charge 0

This species takes part in nine reactions (as a reactant in re99, re86, re34, re42 and as a product in re31 and as a modifier in re99, re86, re34, re42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s11} = v_{77} - v_{1} - v_{28} - v_{88} - v_{89} \tag{379}$$

6.30 Species s44

Name Pi

Initial concentration 379.1 mol · l^{-1}

Charge 0

This species takes part in five reactions (as a reactant in re40 and as a product in re33, re32, re41 and as a modifier in re40).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s44} = v_{73} + v_{82} + v_{84} - v_{12} \tag{380}$$

6.31 Species s344

Name Pi

Initial concentration 379.1 mol·l^{-1}

Charge 0

This species takes part in one reaction (as a product in re9).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s344} = v_{33} \tag{381}$$

6.32 Species s193

Name Phosphopentose isomerase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re46).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s193} = 0 \tag{382}$$

6.33 Species s79

Name Phosphohexo isomerase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re26).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s79} = 0 \tag{383}$$

6.34 Species s249

Name Phosphogluco mutase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re54).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s249} = 0 \tag{384}$$

6.35 Species s45

Name PYRUVATE KINASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re31).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s45} = 0 \tag{385}$$

6.36 Species s91

Name PYRUVATE DEHYDROGENASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s91} = 0 \tag{386}$$

6.37 Species s90

Name PYRUVATE CARBOXYLASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re34).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s90} = 0 \tag{387}$$

6.38 Species s200

Name PPi

Initial concentration $1.8\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re48).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s200} = v_{110} \tag{388}$$

6.39 Species s363

Name PPi

Initial concentration $1.8\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re12).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s363} = v_7 \tag{389}$$

6.40 Species s36

Name PHOSPHO TRIOSE ISOMERASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re39).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s36} = 0 \tag{390}$$

6.41 Species s43

Name PGA MUTASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re29).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s43} = 0 \tag{391}$$

6.42 Species s86

Name PGA KINASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re28).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s86} = 0 \tag{392}$$

6.43 Species s88

Name PEP CARBOXYKINASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re35).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s88} = 0 \tag{393}$$

6.44 Species s10

Name PEP

Initial concentration $17.4\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re31 and as a product in re30, re35 and as a modifier in re31).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s10} = v_{86} + v_{87} - v_{77} \tag{394}$$

6.45 Species s34

Name Ornithine

Initial concentration $89\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re9 and as a product in re14 and as a modifier in re9).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s34} = v_{4} - v_{33} \tag{395}$$

6.46 Species s81

Name OXALOACETATE

Initial concentration $61\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re35 and as a product in re34 and as a modifier in re35).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s81} = v_{88} - v_{87} \tag{396}$$

6.47 Species s50

Name OAA

Initial concentration $61\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re3, re15 and as a product in re22 and as a modifier in re3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s50} = v_{72} - v_{69} - v_{78} \tag{397}$$

6.48 Species s190

Name NAPDH

Initial concentration $51\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re45).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s190} = v_{107} \tag{398}$$

6.49 Species s185

Name NADPH

Initial concentration $51\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re43).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s185} = v_{105} \tag{399}$$

6.50 Species s334

Name NADP+

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a reactant in re43, re45).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s334} = -v_{105} - v_{107} \tag{400}$$

6.51 Species s67

Name NADH

Initial concentration $22\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re85, re41 and as a product in re40 and as a modifier in re85).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s67} = v_{12} - v_{9} - v_{84} \tag{401}$$

6.52 Species s351

Name NADH

Initial concentration $22\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in 23 reactions (as a reactant in re101, re102, re103, re109, re95 and as a product in re22, re23, re18, re42, re112, re115, re119, re122, re127, re130, re134, re137, re143, re146 and as a modifier in re101, re102, re103, re109).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s351} = {} & v_{72} + v_{79} + v_{80} + v_{89} + v_{164} + v_{165} + v_{166} + v_{167} + v_{168} + v_{169} \\ & + v_{170} + v_{171} + v_{172} + v_{173} - v_{57} - v_{58} - v_{59} - v_{60} - v_{125}\end{aligned} \tag{402}$$

6.53 Species s381

Name NADH

Initial concentration $22\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in six reactions (as a reactant in re77 and as a product in re101, re102, re103, re109 and as a modifier in re77).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s381} = v_{57} + v_{58} + v_{59} + v_{60} - v_{26} \tag{403}$$

6.54 Species s93

Name NAD+

Initial concentration $24\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re40 and as a product in re85, re41 and as a modifier in re40).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s93} = v_{9} + v_{84} - v_{12} \tag{404}$$

6.55 Species s355

Name NAD+

Initial concentration $24\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in 28 reactions (as a reactant in re104, re105, re106, re108, re22, re23, re18, re42, re112, re115, re119, re122, re127, re130, re134, re137, re143, re146 and as a product in re78, re104, re105, re106, re108, re95 and as a modifier in re104, re105, re106, re108).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s355} = {} & v_{46} + v_{47} + v_{48} + v_{49} + v_{50} + v_{125} - v_{47} - v_{48} - v_{49} - v_{50} - v_{72} - v_{79} - v_{80} \\ & - v_{89} - v_{164} - v_{165} - v_{166} - v_{167} - v_{168} - v_{169} - v_{170} - v_{171} - v_{172} - v_{173}\end{aligned} \tag{405}$$

6.56 Species s333

Name Mg2+

Initial concentration $850\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a modifier in re28, re43, re44, re88).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s333} = 0 \tag{406}$$

6.57 Species s357

Name Mg2+

Initial concentration 850 mol · l^{-1}

Charge 0

This species takes part in one reaction (as a modifier in re42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s357} = 0 \tag{407}$$

6.58 Species s28

Name Malate dehydrogenase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re22).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s28} = 0 \tag{408}$$

6.59 Species s9

Name Malate

Initial concentration 3.2 mol · l^{-1}

Charge 0

This species takes part in three reactions (as a reactant in re22 and as a product in re21 and as a modifier in re22).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s9} = v_{71} - v_{72} \tag{409}$$

6.60 Species s252

Name Limit Dextrin

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re56 and as a product in re55 and as a modifier in re56).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s252} = v_{113} - v_{114} \tag{410}$$

6.61 Species s307

Name Lactose

Initial concentration $1.45\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in two reactions (as a reactant in re90 and as a modifier in re90).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s307} = -\,v_{29} \tag{411}$$

6.62 Species s189

Name Lactonase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re44).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s189} = 0 \tag{412}$$

6.63 Species s296

Name Lactate

Initial concentration $740\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re85 and as a product in re86 and as a modifier in re85).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s296} = v_{28} - v_{9} \tag{413}$$

6.64 Species s95

Name LIPOATE

Initial concentration $0.077\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s95} = -\,v_{89} \tag{414}$$

6.65 Species s56

Name Isocitrate dehydrogenase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re23).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s56} = 0 \tag{415}$$

6.66 Species s52

Name Isocitrate

Initial concentration $6\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re23 and as a product in re17 and as a modifier in re23).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s52} = v_{131} - v_{79} \tag{416}$$

6.67 Species s16

Name Hexokinase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re25).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s16} = 0 \tag{417}$$

6.68 Species s322

Name HMGCoA

Initial concentration $0.25\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re93 and as a product in re92 and as a modifier in re93).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s322} = v_{123} - v_{30} \tag{418}$$

6.69 Species s327

Name HMG-CoA Synthase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re92).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s327} = 0 \tag{419}$$

6.70 Species s25

Name HCO3-+ NH4+

Initial concentration $24900\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re6 and as a product in re7, re8 and as a modifier in re6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s25} = v_2 + v_3 - v_{75} \tag{420}$$

6.71 Species s64

Name H2O

Initial concentration $5.5\cdot 10^7\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re33, re44, re80, re87).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s64} = -v_{73} - v_{106} - v_{116} - v_{120} \tag{421}$$

6.72 Species s347

Name H2O

Initial concentration $5.5\cdot 10^7\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in 19 reactions (as a reactant in re71, re13, re21, re15, re92, re17, re111, re114, re118, re121, re126, re129, re133, re136, re142, re145 and as a product in re16 and as a modifier in re71, re13).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s347} = v_{130} - v_{17} - v_{35} - v_{71} - v_{78} - v_{123} - v_{131} - v_{154} - v_{155} - v_{156} - v_{157} - v_{158} - v_{159} - v_{160} - v_{161} - v_{162} - v_{163} \tag{422}$$

6.73 Species s32

Name H20

Initial concentration $5.5 \cdot 10^{7}\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re32).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s32} = -v_{82} \tag{423}$$

6.74 Species s329

Name H+

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a reactant in re41 and as a product in re40, re89, re45).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s329} = v_{12} + v_{66} + v_{107} - v_{84} \tag{424}$$

6.75 Species s361

Name H+

Initial amount 0 mol

This species takes part in 15 reactions (as a reactant in re95 and as a product in re22, re23, re18, re42, re112, re115, re119, re122, re127, re130, re134, re137, re143, re146).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s361} = v_{72} + v_{79} + v_{80} + v_{89} + v_{164} + v_{165} + v_{166} + v_{167} + v_{168} + v_{169} + v_{170} + v_{171} + v_{172} + v_{173} - v_{125} \tag{425}$$

6.76 Species s255

Name Glygogen Phosphorylase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re57).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s255} = 0 \tag{426}$$

6.77 Species s250

Name Glycosyl-4,6-Transferase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re50).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s250} = 0 \tag{427}$$

6.78 Species s203

Name Glycosyl transferase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re50).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s203} = 0 \tag{428}$$

6.79 Species s251

Name Glycogen phosphorylase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re55).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s251} = 0 \tag{429}$$

6.80 Species s336

Name Glycogen Synthase

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a modifier in re50, re50).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s336} = 0 \tag{430}$$

6.81 Species s197

Name Glycogen Primer

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re50 and as a product in re49 and as a modifier in re50).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s197} = v_{14} - v_{127} \tag{431}$$

6.82 Species s198

Name Glycogen

Initial concentration $43.3\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re55 and as a product in re50 and as a modifier in re55).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s198} = v_{127} - v_{113} \tag{432}$$

6.83 Species s51

Name Glycerol3P

Initial concentration $30\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re82 and as a product in re81 and as a modifier in re82).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s51} = v_{8} - v_{27} \tag{433}$$

6.84 Species s293

Name Glyceraldehyde

Initial concentration $1476\ \mathrm{mol}\cdot 1^{-1}$

Charge 0

This species takes part in five reactions (as a reactant in re81, re84 and as a product in re83 and as a modifier in re81, re84).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s293} = v_{118} - v_{8} - v_{119} \tag{434}$$

6.85 Species s340

Name Glutamine

Initial concentration $586\ \mathrm{mol}\cdot 1^{-1}$

Charge 0

This species takes part in five reactions (as a reactant in re7, re4 and as a product in re1 and as a modifier in re7, re4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s340} = v_{31} - v_{2} - v_{68} \tag{435}$$

6.86 Species s378

Name Glutamine

Initial concentration $586\ \mathrm{mol}\cdot 1^{-1}$

Charge 0

This species takes part in two reactions (as a reactant in re1 and as a modifier in re1).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s378} = -v_{31} \tag{436}$$

6.87 Species s18

Name Glutaminase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s18} = 0 \tag{437}$$

6.88 Species s341

Name Glutamate

Initial concentration $7.9\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re8 and as a product in re4, re3 and as a modifier in re8).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s341} = v_{68} + v_{69} - v_{3} \tag{438}$$

6.89 Species s379

Name Glutamate

Initial concentration $7.9\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re3 and as a product in re5, re2 and as a modifier in re3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s379} = v_{55} + v_{56} - v_{69} \tag{439}$$

6.90 Species s71

Name Glucose

Initial concentration $4440\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in eight reactions (as a reactant in re25 and as a product in re85, re90, re32, re56, re80, re87 and as a modifier in re25).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s71} = v_{9} + v_{29} + v_{82} + v_{114} + v_{116} + v_{120} - v_{67} \tag{440}$$

6.91 Species s302

Name Galactose1P

Initial concentration $31\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re89 and as a product in re88 and as a modifier in re89).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s302} = v_{121} - v_{66} \tag{441}$$

6.92 Species s306

Name Galactose

Initial concentration $88.3\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re88 and as a product in re90 and as a modifier in re88).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s306} = v_{29} - v_{121} \tag{442}$$

6.93 Species s305

Name Galactokinase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re88).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s305} = 0 \tag{443}$$

6.94 Species s48

Name GTP

Initial concentration $56\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re35).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s48} = v_{87} \tag{444}$$

6.95 Species s241

Name GDP

Initial concentration $15\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re35).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s241} = -v_{87} \tag{445}$$

6.96 Species s352

Name GDP

Initial concentration $15\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re19).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s352} = -v_{81} \tag{446}$$

6.97 Species s35

Name GA3P

Initial concentration $4.8\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in eleven reactions (as a reactant in re40, re39, re53 and as a product in re37, re41, re84, re52, re51 and as a modifier in re40, re39, re53).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s35} = v_5 + v_{84} + v_{119} + v_{128} + v_{129} - v_{12} - v_{74} - v_{111} \tag{447}$$

6.98 Species s186

Name G6PDehydrogenase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re43).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s186} = 0 \tag{448}$$

6.99 Species s234

Name G6P

Initial concentration $29.1\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in nine reactions (as a reactant in re32, re26, re43, re54 and as a product in re25 and as a modifier in re32, re26, re43, re54).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s234} = v_{67} - v_{82} - v_{83} - v_{105} - v_{112} \tag{449}$$

6.100 Species s85

Name G3P DEHYDROGENASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re41).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s85} = 0 \tag{450}$$

6.101 Species s195

Name G1P

Initial concentration $5\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in six reactions (as a reactant in re48 and as a product in re54, re55, re57, re91 and as a modifier in re48).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s195} = v_{112} + v_{113} + v_{115} + v_{122} - v_{110} \tag{451}$$

6.102 Species s77

Name G-6-P Phosphatase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re32).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s77} = 0 \tag{452}$$

6.103 Species s40

Name Fumarate

Initial concentration $1.5\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re21 and as a product in re24, re20 and as a modifier in re21).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s40} = v_{34} + v_{70} - v_{71} \tag{453}$$

6.104 Species s27

Name Fumarase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re21).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s27} = 0 \tag{454}$$

6.105 Species s286

Name Fructose

Initial concentration $31\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re79 and as a product in re80 and as a modifier in re79).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s286} = v_{116} - v_{117} \tag{455}$$

6.106 Species s287

Name Fructokinase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re79).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s287} = 0 \tag{456}$$

6.107 Species s374

Name FeS

Initial amount 0 mol

This species takes part in three reactions (as a reactant in re63 and as a product in re62 and as a modifier in re63).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s374} = v_{52} - v_{19} \tag{457}$$

6.108 Species s377

Name FeS

Initial amount 0 mol

This species takes part in six reactions (as a reactant in re59, re66 and as a product in re58, re66 and as a modifier in re59, re66).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s377} = v_{53} + v_{54} - v_{25} - v_{54} \tag{458}$$

6.109 Species s269

Name FMN

Initial concentration $0.0075\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in seven reactions (as a reactant in re78, re58, re72 and as a product in re77 and as a modifier in re78, re58, re72).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s269} = v_{26} - v_{46} - v_{53} - v_{63} \tag{459}$$

6.110 Species s353

Name FADH2

Initial amount 0 mol

This species takes part in 16 reactions (as a reactant in re59, re100 and as a product in re100, re20, re110, re117, re125, re124, re141, re132, re140, re139, re149, re148 and as a modifier in re59, re100).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s353} = {} & v_{45} + v_{70} + v_{144} + v_{145} + v_{146} + v_{147} + v_{148} \\ & + v_{149} + v_{150} + v_{151} + v_{152} + v_{153} - v_{25} - v_{45}\end{aligned} \tag{460}$$

6.111 Species s356

Name FAD

Initial concentration $0.075\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in 16 reactions (as a reactant in re107, re20, re42, re110, re117, re125, re124, re141, re132, re140, re139, re149, re148 and as a product in re59, re107 and as a modifier in re107).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s356} = v_{25} + v_{51} - v_{51} - v_{70} - v_{89} - v_{144} - v_{145} - v_{146} - v_{147} - v_{148} - v_{149} - v_{150} - v_{151} - v_{152} - v_{153} \tag{461}$$

6.112 Species s53

Name FA

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a reactant in re82 and as a modifier in re82).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s53} = -v_{27} \tag{462}$$

6.113 Species s3

Name F6P

Initial concentration $10.2\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in six reactions (as a reactant in re27 and as a product in re33, re26, re53, re52 and as a modifier in re27).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s3} = v_{73} + v_{83} + v_{111} + v_{128} - v_{10} \tag{463}$$

6.114 Species s285

Name F1P

Initial concentration $0.17\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re83 and as a product in re79 and as a modifier in re83).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s285} = v_{117} - v_{118} \tag{464}$$

6.115 Species s73

Name F1,6P

Initial concentration $1.2\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in seven reactions (as a reactant in re37, re38, re33 and as a product in re27 and as a modifier in re37, re38, re33).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s73} = v_{10} - v_5 - v_{13} - v_{73} \tag{465}$$

6.116 Species s31

Name F1,6BISPHOSPHATASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re33).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s31} = 0 \tag{466}$$

6.117 Species s247

Name Erythrose4P

Initial concentration $1770\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in two reactions (as a reactant in re52 and as a product in re53).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s247} = v_{111} - v_{128} \tag{467}$$

6.118 Species s194

Name Epimerase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re47).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s194} = 0 \tag{468}$$

6.119 Species s365

Name Enoyl-CoA hydratase

Initial amount 0 mol

This species takes part in ten reactions (as a modifier in re111, re114, re118, re121, re126, re129, re133, re136, re142, re145).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s365} = 0 \tag{469}$$

6.120 Species s87

Name ENOLASE

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re30).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s87} = 0 \tag{470}$$

6.121 Species s82

Name DHAP

Initial concentration $15.6\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a product in re38, re39, re83).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s82} = v_{13} + v_{74} + v_{118} \tag{471}$$

6.122 Species s183

Name D-Ribulose5P

Initial concentration $1.58\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re46 and as a product in re45 and as a modifier in re46).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s183} = v_{107} - v_{108} \tag{472}$$

6.123 Species s325

Name D-Beta-Hydroxybutyrate

Initial concentration $36\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re95).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s325} = v_{125} \tag{473}$$

6.124 Species s330

Name D Betahydroxybutyrate dehydrogenase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re95).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s330} = 0 \tag{474}$$

6.125 Species s265

Name Cyb

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re62 and as a product in re61 and as a modifier in re62).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s265} = v_{23} - v_{52} \tag{475}$$

6.126 Species s258

Name Cya-a3

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a product in re68, re70, re71, re76).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s258} = v_{15} + v_{16} + v_{17} + v_{18} \tag{476}$$

6.127 Species s263

Name CyC2

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re67 and as a product in re65 and as a modifier in re67).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s263} = v_{22} - v_{21} \tag{477}$$

6.128 Species s262

Name CyC

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re68 and as a product in re67 and as a modifier in re68).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s262} = v_{21} - v_{15} \tag{478}$$

6.129 Species s238

Name CoA-SH

Initial concentration $20\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in five reactions (as a product in re159, re160, re161, re162, re163).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s238} = v_{95} + v_{96} + v_{97} + v_{98} + v_{99} \tag{479}$$

6.130 Species s350

Name CoA-SH

Initial concentration $20\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in 16 reactions (as a reactant in re18, re113, re116, re120, re123, re128, re131, re135, re138, re144, re96, re147 and as a product in re15, re19, re92, re97).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s350} = v_{78} + v_{81} + v_{123} + v_{141} - v_{80} - v_{132} - v_{133} - v_{134} - v_{135} - v_{136} - v_{137} - v_{138} - v_{139} - v_{140} - v_{142} - v_{143} \tag{480}$$

6.131 Species s92

Name Co-Ash

Initial concentration $20\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s92} = -v_{89} \tag{481}$$

6.132 Species s38

Name Citrullyl AMP intermediate

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re12 and as a product in re11 and as a modifier in re12).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s38} = v_{6} - v_{7} \tag{482}$$

6.133 Species s342

Name Citrulline

Initial concentration $38\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in six reactions (as a reactant in re11, re10 and as a product in re10, re9 and as a modifier in re11, re10).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s342} = v_{32} + v_{33} - v_{6} - v_{32} \tag{483}$$

6.134 Species s54

Name Citrate Synthase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re15).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s54} = 0 \tag{484}$$

6.135 Species s2

Name Citrate

Initial concentration $190\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re16 and as a product in re15 and as a modifier in re16).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s2} = v_{78} - v_{130} \tag{485}$$

6.136 Species s126

Name Carnitine_cyt

Initial concentration $43\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in ten reactions (as a reactant in re159, re160, re161, re162, re163 and as a modifier in re159, re160, re161, re162, re163).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s126} = -v_{95} - v_{96} - v_{97} - v_{98} - v_{99} \tag{486}$$

6.137 Species s41

Name Carbamoyl phosphate synthetase I

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s41} = 0 \tag{487}$$

6.138 Species s33

Name Carbamoyl phosphate

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re9 and as a product in re6 and as a modifier in re9).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s33} = v_{75} - v_{33} \tag{488}$$

6.139 Species s237

Name CO2

Initial concentration $21600\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re45).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s237} = v_{107} \tag{489}$$

6.140 Species s349

Name CO2

Initial concentration $21600\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in four reactions (as a reactant in re15 and as a product in re23, re18, re94).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s349} = v_{79} + v_{80} + v_{124} - v_{78} \tag{490}$$

6.141 Species s122

Name CAC

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a modifier in re164, re168, re167, re166, re165).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s122} = 0 \tag{491}$$

6.142 Species s109

Name C8Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re139 and as a product in re135 and as a modifier in re139).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s109} = v_{138} - v_{151} \tag{492}$$

6.143 Species s112

Name C8 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re137 and as a product in re136 and as a modifier in re137).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s112} = v_{161} - v_{171} \tag{493}$$

6.144 Species s111

Name C8 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re154, re138 and as a product in re137 and as a modifier in re154, re138).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s111} = v_{171} - v_{40} - v_{139} \tag{494}$$

6.145 Species s113

Name C8 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re136 and as a product in re139 and as a modifier in re136).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s113} = v_{151} - v_{161} \tag{495}$$

6.146 Species s110

Name C6Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re149 and as a product in re138 and as a modifier in re149).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s110} = v_{139} - v_{152} \tag{496}$$

6.147 Species s115

Name C6 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re143 and as a product in re142 and as a modifier in re143).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s115} = v_{162} - v_{172} \tag{497}$$

6.148 Species s116

Name C6 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re152, re144 and as a product in re143 and as a modifier in re152, re144).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s116} = v_{172} - v_{38} - v_{140} \tag{498}$$

6.149 Species s114

Name C6 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re142 and as a product in re149 and as a modifier in re142).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s114} = v_{152} - v_{162} \tag{499}$$

6.150 Species s117

Name C4Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re148 and as a product in re144 and as a modifier in re148).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s117} = v_{140} - v_{153} \tag{500}$$

6.151 Species s120

Name C4 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re146 and as a product in re145 and as a modifier in re146).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s120} = v_{163} - v_{173} \tag{501}$$

6.152 Species s119

Name C4 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re147 and as a product in re146 and as a modifier in re147).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s119} = v_{173} - v_{143} \tag{502}$$

6.153 Species s121

Name C4 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re145 and as a product in re148 and as a modifier in re145).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s121} = v_{153} - v_{163} \tag{503}$$

6.154 Species s127

Name C22car_ims

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re164 and as a product in re159 and as a modifier in re164).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s127} = v_{95} - v_{90} \tag{504}$$

6.155 Species s367

Name C22car_ims

Initial amount 0 mol

This species takes part in three reactions (as a reactant in re169 and as a product in re164 and as a modifier in re169).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s367} = v_{90} - v_{100} \tag{505}$$

6.156 Species s15

Name C22Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re110 and as a product in re169 and as a modifier in re110).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s15} = v_{100} - v_{144} \tag{506}$$

6.157 Species s22

Name C22 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re112 and as a product in re111 and as a modifier in re112).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s22} = v_{154} - v_{164} \tag{507}$$

6.158 Species s37

Name C22 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re150, re113 and as a product in re112 and as a modifier in re150, re113).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s37} = v_{164} - v_{36} - v_{132} \tag{508}$$

6.159 Species s125

Name C22 AcylCoA_cyt

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a reactant in re159 and as a modifier in re159).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s125} = -v_{95} \tag{509}$$

6.160 Species s19

Name C22 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re111 and as a product in re110 and as a modifier in re111).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s19} = v_{144} - v_{154} \tag{510}$$

6.161 Species s129

Name C20car_ims

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re165 and as a product in re160 and as a modifier in re165).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s129} = v_{96} - v_{94} \tag{511}$$

6.162 Species s371

Name C20car_ims

Initial amount 0 mol

This species takes part in three reactions (as a reactant in re170 and as a product in re165 and as a modifier in re170).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s371} = v_{94} - v_{101} \tag{512}$$

6.163 Species s42

Name C20Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a reactant in re117 and as a product in re170, re113 and as a modifier in re117).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s42} = v_{101} + v_{132} - v_{145} \tag{513}$$

6.164 Species s68

Name C20 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re115 and as a product in re114 and as a modifier in re115).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s68} = v_{155} - v_{165} \tag{514}$$

6.165 Species s66

Name C20 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re151, re116 and as a product in re115 and as a modifier in re151, re116).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s66} = v_{165} - v_{37} - v_{133} \tag{515}$$

6.166 Species s128

Name C20 AcylCoA_cyt

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a reactant in re160 and as a modifier in re160).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s128} = -v_{96} \tag{516}$$

6.167 Species s69

Name C20 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re114 and as a product in re117 and as a modifier in re114).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s69} = v_{145} - v_{155} \tag{517}$$

6.168 Species s131

Name C18car_ims

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re166 and as a product in re161 and as a modifier in re166).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s131} = v_{97} - v_{93} \tag{518}$$

6.169 Species s370

Name C18car_ims

Initial amount 0 mol

This species takes part in three reactions (as a reactant in re171 and as a product in re166 and as a modifier in re171).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s370} = v_{93} - v_{102} \tag{519}$$

6.170 Species s65

Name C18Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a reactant in re125 and as a product in re171, re116 and as a modifier in re125).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s65} = v_{102} + v_{133} - v_{146} \tag{520}$$

6.171 Species s72

Name C18 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re119 and as a product in re118 and as a modifier in re119).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s72} = v_{156} - v_{166} \tag{521}$$

6.172 Species s80

Name C18 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re153, re120 and as a product in re119 and as a modifier in re153, re120).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s80} = v_{166} - v_{39} - v_{134} \tag{522}$$

6.173 Species s130

Name C18 AcylCoA_cyt

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a reactant in re161 and as a modifier in re161).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s130} = -v_{97} \tag{523}$$

6.174 Species s70

Name C18 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re118 and as a product in re125 and as a modifier in re118).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s70} = v_{146} - v_{156} \tag{524}$$

6.175 Species s133

Name C16car_ims

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re167 and as a product in re162 and as a modifier in re167).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s133} = v_{98} - v_{92} \tag{525}$$

6.176 Species s369

Name C16car_ims

Initial amount 0 mol

This species takes part in three reactions (as a reactant in re172 and as a product in re167 and as a modifier in re172).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s369} = v_{92} - v_{103} \tag{526}$$

6.177 Species s83

Name C16Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a reactant in re124 and as a product in re172, re120 and as a modifier in re124).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s83} = v_{103} + v_{134} - v_{147} \tag{527}$$

6.178 Species s96

Name C16 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re122 and as a product in re121 and as a modifier in re122).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s96} = v_{157} - v_{167} \tag{528}$$

6.179 Species s89

Name C16 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re156, re123 and as a product in re122 and as a modifier in re156, re123).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s89} = v_{167} - v_{42} - v_{135} \tag{529}$$

6.180 Species s132

Name C16 AcylCoA_cyt

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a reactant in re162 and as a modifier in re162).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s132} = -v_{98} \tag{530}$$

6.181 Species s97

Name C16 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re121 and as a product in re124 and as a modifier in re121).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s97} = v_{147} - v_{157} \tag{531}$$

6.182 Species s135

Name C14car_ims

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re168 and as a product in re163 and as a modifier in re168).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s135} = v_{99} - v_{91} \tag{532}$$

6.183 Species s368

Name C14car_ims

Initial amount 0 mol

This species takes part in three reactions (as a reactant in re173 and as a product in re168 and as a modifier in re173).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s368} = v_{91} - v_{104} \tag{533}$$

6.184 Species s84

Name C14Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a reactant in re141 and as a product in re173, re123 and as a modifier in re141).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s84} = v_{104} + v_{135} - v_{148} \tag{534}$$

6.185 Species s99

Name C14 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re127 and as a product in re126 and as a modifier in re127).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s99} = v_{158} - v_{168} \tag{535}$$

6.186 Species s100

Name C14 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re157, re128 and as a product in re127 and as a modifier in re157, re128).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s100} = v_{168} - v_{43} - v_{136} \tag{536}$$

6.187 Species s134

Name C14 AcylCoA_cyt

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a reactant in re163 and as a modifier in re163).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s134} = -v_{99} \tag{537}$$

6.188 Species s98

Name C14 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re126 and as a product in re141 and as a modifier in re126).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s98} = v_{148} - v_{158} \tag{538}$$

6.189 Species s101

Name C12Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re132 and as a product in re128 and as a modifier in re132).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s101} = v_{136} - v_{149} \tag{539}$$

6.190 Species s104

Name C12 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re130 and as a product in re129 and as a modifier in re130).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s104} = v_{159} - v_{169} \tag{540}$$

6.191 Species s103

Name C12 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re158, re131 and as a product in re130 and as a modifier in re158, re131).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s103} = v_{169} - v_{44} - v_{137} \tag{541}$$

6.192 Species s105

Name C12 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re129 and as a product in re132 and as a modifier in re129).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s105} = v_{149} - v_{159} \tag{542}$$

6.193 Species s102

Name C10Acyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re140 and as a product in re131 and as a modifier in re140).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s102} = v_{137} - v_{150} \tag{543}$$

6.194 Species s107

Name C10 L-3-hydroxyacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re134 and as a product in re133 and as a modifier in re134).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s107} = v_{160} - v_{170} \tag{544}$$

6.195 Species s108

Name C10 Ketoacyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in five reactions (as a reactant in re155, re135 and as a product in re134 and as a modifier in re155, re135).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s108} = v_{170} - v_{41} - v_{138} \tag{545}$$

6.196 Species s106

Name C10 2-trans-enoyl-CoA

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re133 and as a product in re140 and as a modifier in re133).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s106} = v_{150} - v_{160} \tag{546}$$

6.197 Species s366

Name Beta-hydroxyacyl-CoA dehydrogenase

Initial amount 0 mol

This species takes part in ten reactions (as a modifier in re112, re115, re119, re122, re127, re130, re134, re137, re143, re146).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s366} = 0 \tag{547}$$

6.198 Species s332

Name Beta-KetoacylCoA dehydrogenase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re98).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s332} = 0 \tag{548}$$

6.199 Species s24

Name Aspartate aminotransferase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s24} = 0 \tag{549}$$

6.200 Species s23

Name Aspartate

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re12 and as a product in re3 and as a modifier in re12).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s23} = v_{69} - v_{7} \tag{550}$$

6.201 Species s39

Name Arginosuccinate

Initial concentration $0.0032\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re24 and as a product in re12 and as a modifier in re24).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s39} = v_{7} - v_{34} \tag{551}$$

6.202 Species s343

Name Arginine

Initial concentration $99\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in six reactions (as a reactant in re14, re13 and as a product in re24, re13 and as a modifier in re14, re13).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s343} = v_{34} + v_{35} - v_4 - v_{35} \tag{552}$$

6.203 Species s12

Name Amino acids

Initial amount 0 mol

Charge 0

This species takes part in two reactions (as a reactant in re2 and as a modifier in re2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s12} = -v_{56} \tag{553}$$

6.204 Species s254

Name Alpha1,6-Glycosidase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re56).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s254} = 0 \tag{554}$$

6.205 Species s57

Name Alpha-KG dehydrgenase complex

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re18).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s57} = 0 \tag{555}$$

6.206 Species s5

Name Alpha-KG

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re18 and as a product in re23 and as a modifier in re18).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s5} = v_{79} - v_{80} \tag{556}$$

6.207 Species s17

Name Alpha keto acid

Initial amount 0 mol

Charge 0

This species takes part in three reactions (as a reactant in re2 and as a product in re5 and as a modifier in re2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s17} = v_{55} - v_{56} \tag{557}$$

6.208 Species s21

Name Alpha KG

Initial concentration $8.9\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re5 and as a product in re2 and as a modifier in re5).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s21} = v_{56} - v_{55} \tag{558}$$

6.209 Species s291

Name Aldolase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re83).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s291} = 0 \tag{559}$$

6.210 Species s14

Name Alanine

Initial concentration 333 mol · l^{-1}

Charge 0

This species takes part in three reactions (as a reactant in re5 and as a product in re99 and as a modifier in re5).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s14} = v_1 - v_{55} \tag{560}$$

6.211 Species s364

Name Acyl-CoA dehydrogenase

Initial amount 0 mol

This species takes part in ten reactions (as a modifier in re110, re117, re125, re124, re141, re132, re140, re139, re149, re148).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s364} = 0 \tag{561}$$

6.212 Species s354

Name Aconitase

Initial amount 0 mol

This species takes part in two reactions (as a modifier in re16, re17).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s354} = 0 \tag{562}$$

6.213 Species s326

Name AcetylCoA

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a reactant in re92).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s326} = -v_{123} \tag{563}$$

6.214 Species s324

Name Acetone

Initial concentration $30\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re94).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s324} = v_{124} \tag{564}$$

6.215 Species s321

Name AcetoacetylCoA

Initial amount 0 mol

Charge 0

This species takes part in six reactions (as a reactant in re92, re96 and as a product in re98, re97 and as a modifier in re92, re96).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s321} = v_{126} + v_{141} - v_{123} - v_{142} \tag{565}$$

6.216 Species s328

Name Acetoacetate Decarboxylase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re94).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s328} = 0 \tag{566}$$

6.217 Species s323

Name Acetoacetate

Initial concentration $21\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in seven reactions (as a reactant in re94, re95, re98 and as a product in re93 and as a modifier in re94, re95, re98).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s323} = v_{30} - v_{124} - v_{125} - v_{126} \tag{567}$$

6.218 Species s63

Name ATP

Initial concentration $1390\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in twelve reactions (as a reactant in re27, re36, re25, re34, re57, re79, re84, re88 and as a product in re31, re28 and as a modifier in re27, re36).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s63} = v_{77} + v_{85} - v_{10} - v_{11} - v_{67} - v_{88} - v_{115} - v_{117} - v_{119} - v_{121} \tag{568}$$

6.219 Species s345

Name ATP

Initial concentration $1390\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in six reactions (as a reactant in re11, re12, re175 and as a product in re19 and as a modifier in re11, re12).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s345} = v_{81} - v_{6} - v_{7} - v_{174} \tag{569}$$

6.220 Species s47

Name AMP

Initial concentration $51\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in two reactions (as a product in re12, re182).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s47} = v_{7} + v_{175} \tag{570}$$

6.221 Species s46

Name ADP

Initial concentration $160\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in ten reactions (as a reactant in re31, re28 and as a product in re27, re36, re25, re34, re57, re79, re84, re88).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s46} = v_{10} + v_{11} + v_{67} + v_{88} + v_{115} + v_{117} + v_{119} + v_{121} - v_{77} - v_{85} \tag{571}$$

6.222 Species s346

Name ADP

Initial concentration $160\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re11).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s346} = v_6 \tag{572}$$

6.223 Species s348

Name A CoA

Initial amount 0 mol

This species takes part in 17 reactions (as a reactant in re15, re97 and as a product in re93, re150, re151, re152, re153, re154, re155, re156, re157, re158, re42, re96, re147 and as a modifier in re15, re97).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s348} = {} & v_{30} + v_{36} + v_{37} + v_{38} + v_{39} + v_{40} + v_{41} + v_{42} \\ & + v_{43} + v_{44} + v_{89} + v_{142} + v_{143} - v_{78} - v_{141}\end{aligned} \tag{573}$$

6.224 Species s192

Name 6PGluconate dehydrogenase

Initial amount 0 mol

Charge 0

This species takes part in one reaction (as a modifier in re45).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s192} = 0 \tag{574}$$

6.225 Species s182

Name 6PGluconate

Initial concentration $2720\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re45 and as a product in re44 and as a modifier in re45).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s182} = v_{106} - v_{107} \tag{575}$$

6.226 Species s181

Name 6PGDL

Initial concentration $0.00762\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re44 and as a product in re43 and as a modifier in re44).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s181} = v_{105} - v_{106} \tag{576}$$

6.227 Species s8

Name 3-PGA

Initial concentration $47.2\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in five reactions (as a reactant in re36, re29 and as a product in re28 and as a modifier in re36, re29).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s8} = v_{85} - v_{11} - v_{76} \tag{577}$$

6.228 Species s259

Name 2e

Initial amount 0 mol

Charge 0

This species takes part in four reactions (as a reactant in re64 and as a product in re63, re75 and as a modifier in re64).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s259} = v_{19} + v_{20} - v_{62} \tag{578}$$

6.229 Species s300

Name 2NADH

Initial concentration $44\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re89).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s300} = v_{66} \tag{579}$$

6.230 Species s301

Name 2NAD+

Initial concentration $48\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re89).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s301} = -\ v_{66} \tag{580}$$

6.231 Species s358

Name 2H+

Initial amount 0 mol

This species takes part in six reactions (as a reactant in re76, re75, re69 and as a modifier in re76, re75, re69).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s358} = -\ v_{18} - v_{20} - v_{24} \tag{581}$$

6.232 Species s389

Name 2H+

Initial amount 0 mol

This species takes part in three reactions (as a product in re72, re73, re74).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s389} = v_{63} + v_{64} + v_{65} \tag{582}$$

6.233 Species s29

Name 2ATP

Initial concentration $2780\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a reactant in re6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s29} = -\ v_{75} \tag{583}$$

6.234 Species s30

Name 2ADP

Initial concentration $320\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in one reaction (as a product in re6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s30} = v_{75} \tag{584}$$

6.235 Species s75

Name 2-PGA

Initial concentration $14\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in three reactions (as a reactant in re30 and as a product in re29 and as a modifier in re30).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s75} = v_{76} - v_{86} \tag{585}$$

6.236 Species s256

Name 1/2O2

Initial concentration $3480\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in two reactions (as a reactant in re70 and as a modifier in re70).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s256} = -v_{16} \tag{586}$$

6.237 Species s74

Name 1,3-BiPGA

Initial concentration $0.4\ \mathrm{mol}\cdot\mathrm{l}^{-1}$

Charge 0

This species takes part in six reactions (as a reactant in re41, re28 and as a product in re36, re40 and as a modifier in re41, re28).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s74} = v_{11} + v_{12} - v_{84} - v_{85} \tag{587}$$

6.238 Species s124

Name Creatine phosphate

Initial concentration $33\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in eight reactions (as a reactant in re175 and as a product in re182 and as a modifier in re169, re170, re171, re172, re173, re175).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s124} = v_{175} - v_{174} \tag{588}$$

6.239 Species s123

Name Creatine

Initial concentration $36.7\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

Charge 0

This species takes part in eight reactions (as a reactant in re182 and as a product in re175 and as a modifier in re159, re160, re161, re162, re163, re182).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s123} = v_{174} - v_{175} \tag{589}$$

6.240 Species s400

Name Creatine Kinase

Initial amount 0 mol

This species takes part in one reaction (as a modifier in re175).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s400} = 0 \tag{590}$$

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