SBML Model Report

Model name: "Ouzounoglou2014 - Modeling of alpha-synuclein effects on neuronal homeostasis"

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: Audald Lloret i Villas[1] and Eleftherios Ouzounoglou[2] at November 20th 2014 at 5:56 p. m. and last time modified at April eighth 2016 at 5:44 p. m. Table 1 provides 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	3
species types	0	species	90
events	0	constraints	0
reactions	136	function definitions	0
global parameters	14	unit definitions	2
rules	3	initial assignments	0

Model Notes

Ouzounoglou2014 - Modeling of alpha-synucleineffects on neuronal homeostasis

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This model is described in the article:In silico modeling of the effects of alpha-synuclein oligomerization on dopaminergic neuronal homeostasis.Ouzounoglou E, Kalamatianos D, Emmanouilidou E, Xilouri M, Stefanis L, Vekrellis K, Manolakos ES.BMC Syst Biol 2014; 8: 54

Abstract:

BACKGROUND: Alpha-synuclein (ASYN) is central in Parkinson's disease (PD) pathogenesis. Converging pieces of evidence suggest that the levels of ASYN expression play a critical role in both familial and sporadic Parkinson's disease. ASYN fibrils are the main component of inclusions called Lewy Bodies (LBs) which are found mainly in the surviving neurons of the substantia nigra. Despite the accumulated knowledge regarding the involvement of ASYN in molecular mechanisms underlying the development of PD, there is much information missing which prevents understanding the causes of the disease and how to stop its progression. RESULTS: Using a Systems Biology approach, we develop a biomolecular reactions model that describes the intracellular ASYN dynamics in relation to overexpression, post-translational modification, oligomerization and degradation of the protein. Especially for the proteolysis of ASYN, the model takes into account the biological knowledge regarding the contribution of Chaperone Mediated Autophagy (CMA), macro-autophagic and proteasome pathways in the protein's degradation. Importantly, inhibitory phenomena, caused by ASYN, concerning CMA (more specifically the lysosomal-associated membrane protein 2a, abbreviated as Lamp2a receptor, which is the rate limiting step of CMA) and the proteasome are carefully modeled. The model is validated by simulation studies of known experimental overexpression data from SH-SY5Y cells and the unknown model parameters are estimated either computationally or by experimental fitting. The calibrated model is then tested under three hypothetical intervention scenarios and in all cases predicts increased cell viability that agrees with experimental evidence. The biomodel has been annotated and is made available in SBML format. CONCLUSIONS: The mathematical model presented here successfully simulates the dynamic phenomena of ASYN overexpression and oligomerization and predicts the biological system's behavior in a number of scenarios not used for model calibration. It allows, for the first time, to qualitatively estimate the protein levels that are capable of deregulating proteolytic homeostasis. In addition, it can help form new hypotheses for intervention that could be tested experimentally.

Note: The model contains reactions of species located in different compartments. If the model is applied using volume sizes unequal to one, an extension of the model might be reasonable to guarantee mass conservation.

This model is hosted on BioModels Database and identified by: BIOMD0000000559.

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 of which three are predefined by SBML and not mentioned in the model.

2.1 Unit `volume`

Name volume

Definition dimensionless

2.2 Unit `substance`

Name substance

Definition item

2.3 Unit `area`

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

Definition m^2

2.4 Unit `length`

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

Definition m

2.5 Unit `time`

Notes Second is the predefined SBML unit for `time`.

Definition s

3 Compartments

This model contains three compartments.

Table 2: Properties of all compartments.

Id	Name	SBO	Spatial Dimensions	Size	Unit	Constant	Outside
`c3`	Lysosome		3	1	dimensionless	☑	
`c2`	M/autophagy&OtherLysDegrPath		3	1	dimensionless	☑	
`c1`	Cytosol		3	1	dimensionless	☑	

3.1 Compartment `c3`

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

Name Lysosome

3.2 Compartment `c2`

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

Name M/autophagy&OtherLysDegrPath

3.3 Compartment `c1`

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

Name Cytosol

4 Species

This model contains 90 species. The boundary condition of one of these species is set to `true` so that this species' amount cannot be changed by any reaction. Section 8 provides further details and the derived rates of change of each species.

Table 3: Properties of each species.

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s51	Lamp2a	c3	item	⊟	⊟
s52	WTasyn	c3	item	⊟	⊟
s53	WTasyn2	c3	item	⊟	⊟
s78	WTasyndegr	c3	item	⊟	⊟
s85	WTasyn2degr	c3	item	⊟	⊟
s211	WTasyn2merCMADegr	c3	item	⊟	⊟
s213	WTasynCMADegr	c3	item	⊟	⊟
s482	DopModWTasyn2merOnLamp	c3	item	⊟	⊟
s483	DopModWTasyn3merOnLamp	c3	item	⊟	⊟
s484	DopModWTasyn4merOnLamp	c3	item	⊟	⊟
s489	DopModWTasyn7merOnLamp	c3	item	⊟	⊟
s490	DopModWTasyn6merOnLamp	c3	item	⊟	⊟
s491	DopModWTasyn5merOnLamp	c3	item	⊟	⊟
s492	DopModWTasyn8merOnLamp	c3	item	⊟	⊟
s493	DopModWTasyn9merOnLamp	c3	item	⊟	⊟
s494	WTasyn3merOnLamp	c3	item	⊟	⊟
s495	WTasyn4merOnLamp	c3	item	⊟	⊟
s496	WTasyn5merOnLamp	c3	item	⊟	⊟
s498	WTasyn6merOnLamp	c3	item	⊟	⊟
s499	WTasyn7merOnLamp	c3	item	⊟	⊟
s500	WTasyn8merOnLamp	c3	item	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s501	WTasyn9merOnLamp	c3	item	⊟	⊟
s536	DopModWTasynOnLamp	c3	item	⊟	⊟
s107	WTasyn2merM/Adegr	c2	item	⊟	⊟
s108	WTasyn3merM/Adegr	c2	item	⊟	⊟
s109	WTasyn4merM/Adegrr	c2	item	⊟	⊟
s110	WTasyn5merM/Adegr	c2	item	⊟	⊟
s111	WTasyn6merM/Adegr	c2	item	⊟	⊟
s112	WTasyn7merM/Adegr	c2	item	⊟	⊟
s113	WTasyn8merM/Adegr	c2	item	⊟	⊟
s445	DopModWTasyn2merM/Adegr	c2	item	⊟	⊟
s446	DopModWTasyn3merM/Adegr	c2	item	⊟	⊟
s447	DopModWTasyn4merM/Adegr	c2	item	⊟	⊟
s448	DopModWTasyn6merM/Adegr	c2	item	⊟	⊟
s451	DopModWTasyn8merM/Adegr	c2	item	⊟	⊟
s517	WTasyn4	c2	item	⊟	⊟
s518	WTasyn5	c2	item	⊟	⊟
s519	WTasyn6	c2	item	⊟	⊟
s520	WTasyn3	c2	item	⊟	⊟
s521	WTasyn2	c2	item	⊟	⊟
s522	WTasyn7	c2	item	⊟	⊟
s523	WTasyn8	c2	item	⊟	⊟
s524	DopModWTasyn7merM/Adegr	c2	item	⊟	⊟
s525	DopModWTasyn8	c2	item	⊟	⊟
s526	DopModWTasyn7	c2	item	⊟	⊟
s528	DopModWTasyn6	c2	item	⊟	⊟
s529	DopModWTasyn5	c2	item	⊟	⊟
s530	DopModWTasyn4	c2	item	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s531	DopModWTasyn3	c2	item	☐	☐
s533	WTasyn	c2	item	☐	☐
s535	DopModWTasyn	c2	item	☐	☐
s527	DopModWTasyn2	c2	item	☐	☐
s1	DopModWTasyn5	c1	item	☐	☐
s2	DopModWTasyn4	c1	item	☐	☐
s3	SOURCE	c1	item	☑	☑
s5	DopModWTasyn3	c1	item	☐	☐
s6	DopModWTasyn2	c1	item	☐	☐
s7	DopModWTasyn	c1	item	☐	☐
s17	WTasyn	c1	item	☐	☐
s18	WTasyn2	c1	item	☐	☐
s20	WTasyn3	c1	item	☐	☐
s21	DopModWTasyn6	c1	item	☐	☐
s22	Dopamine	c1	item	☐	☐
s23	WTasyn5	c1	item	☐	☐
s24	WTasyn4	c1	item	☐	☐
s25	DopModWTasyn7	c1	item	☐	☐
s26	DopModWTasyn8	c1	item	☐	☐
s27	DopModWTasyn9	c1	item	☐	☐
s29	WTasyn9	c1	item	☐	☐
s30	WTasyn8	c1	item	☐	☐
s31	WTasyn7	c1	item	☐	☐
s32	WTasyn6	c1	item	☐	☐
s33	HigherWTasynSPC	c1	item	☐	☐
s35	Proteasome	c1	item	☐	☐
s200	Dopamine_degraded	c1	item	☐	☐

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
s381	ProtWTasyn3	c1	item	⊟	⊟
s383	ProtWTasyn4	c1	item	⊟	⊟
s385	ProtWTasyn5	c1	item	⊟	⊟
s387	ProtWTasyn6	c1	item	⊟	⊟
s389	ProtWTasyn7	c1	item	⊟	⊟
s391	ProtWTasyn8	c1	item	⊟	⊟
s393	ProtWTasyn9	c1	item	⊟	⊟
s473	ProtDopModWTasyn3	c1	item	⊟	⊟
s474	ProtDopModWTasyn4	c1	item	⊟	⊟
s475	ProtDopModWTasyn5	c1	item	⊟	⊟
s476	ProtDopModWTasyn6	c1	item	⊟	⊟
s477	ProtDopModWTasyn7	c1	item	⊟	⊟
s478	ProtDopModWTasyn8	c1	item	⊟	⊟
s479	ProtDopModWTasyn9	c1	item	⊟	⊟
s502	ProtWTasynHigherSPC	c1	item	⊟	⊟

5 Parameters

This model contains 14 global parameters.

Table 4: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k_DisRate	k_DisRate		$4.999533748 \cdot 10^{-7}$		☑
k_2merForm	k_2merForm		$1.462941015 \cdot 10^{-9}$		☑
k_DopModWTasynLampBind	k_DopModWTasynLampBind		$7.6715997 \cdot 10^{-9}$		☑
k_LampFreeWTasyn	k_LampFreeWTasyn		$3.044571674 \cdot 10^{-4}$		☑
k_OligAutophagUptake	k_OligAutophagUptake		$2.39034347 \cdot 10^{-8}$		☑
k_OligomerForm	k_OligomerForm		$3.350497192 \cdot 10^{-8}$		☑
k_ProteasomeBind	k_ProteasomeBind		$3.424693672 \cdot 10^{-9}$		☑
k_ProtOligDegr	k_ProtOligDegr		$3.70096 \cdot 10^{-4}$		☑
k_WTasyn1_2merBindOnLamp	k_WTasyn1_2merBindOnLamp		$6.865455081 \cdot 10^{-7}$		☑
k_WTOligBindOnLamp	k_WTOligBindOnLamp		$4 \cdot 10^{-6}$		☑
Total_Cytosolic_WTASYN_Oligomers	Total_Cytosolic_WTASYN_Oligomers		112.000		⊟
Total_Cytosolic_WTASYN_Monomer	Total_Cytosolic_WTASYN_Monomer		2603.000		⊟
Total_Cytosolic_WTASYN_Dimer	Total_Cytosolic_WTASYN_Dimer		22.000		⊟
k_M_autophagyDegr	k_M_autophagyDegr		0.100		☑

6 Rules

This is an overview of three rules.

6.1 Rule Total_Cytosolic_WTASYN_Dimer

Rule Total_Cytosolic_WTASYN_Dimer is an assignment rule for parameter Total_Cytosolic_WTASYN_Dimer:

$$\text{Total\_Cytosolic\_WTASYN\_Dimer} = \text{s6} \cdot \text{vol}(\text{c1}) + \text{s18} \cdot \text{vol}(\text{c1}) \tag{1}$$

Derived unit item

6.2 Rule Total_Cytosolic_WTASYN_Monomer

Rule Total_Cytosolic_WTASYN_Monomer is an assignment rule for parameter Total_Cytosolic_WTASYN_Monomer:

$$\text{Total\_Cytosolic\_WTASYN\_Monomer} = \text{s17} \cdot \text{vol}(\text{c1}) + \text{s7} \cdot \text{vol}(\text{c1}) \tag{2}$$

Derived unit item

6.3 Rule Total_Cytosolic_WTASYN_Oligomers

Rule Total_Cytosolic_WTASYN_Oligomers is an assignment rule for parameter Total_Cytosolic_WTASYN_Oligomers:

$$\begin{aligned}\text{Total\_Cytosolic\_WTASYN\_Oligomers} = {} & \text{s5} \cdot \text{vol}(\text{c1}) + \text{s2} \cdot \text{vol}(\text{c1}) + \text{s1} \cdot \text{vol}(\text{c1}) + \text{s21} \\ & \cdot \text{vol}(\text{c1}) + \text{s25} \cdot \text{vol}(\text{c1}) + \text{s26} \cdot \text{vol}(\text{c1}) + \text{s27} \cdot \text{vol}(\text{c1}) \\ & + \text{s20} \cdot \text{vol}(\text{c1}) + \text{s24} \cdot \text{vol}(\text{c1}) + \text{s23} \cdot \text{vol}(\text{c1}) + \text{s32} \\ & \cdot \text{vol}(\text{c1}) + \text{s31} \cdot \text{vol}(\text{c1}) + \text{s30} \cdot \text{vol}(\text{c1}) + \text{s29} \cdot \text{vol}(\text{c1})\end{aligned} \tag{3}$$

Derived unit item

7 Reactions

This model contains 136 reactions. All reactions are listed in the following table and are subsequently described in detail. If a reaction is affected by a modifier, the identifier of this species is written above the reaction arrow.

Table 5: Overview of all reactions

№	Id	Name	Reaction Equation	SBO
1	re1	WTasynSynthesis	$s3 \xrightarrow{s3} s17$	
2	re2	DopProduction	$s3 \xrightarrow{s3} s22$	
3	re3	2merForm	$2\,s17 \xrightarrow{s17} s18$	
4	re4	WTasynDopModification	$s17 + s22 \xrightarrow{s17,\ s22} s7$	
5	re5	WTasynLampBind	$s17 + s51 \xrightarrow{s17,\ s51} s78$	
6	re6	AutophagosomeUptakeWTasyn2mer	$s18 \xrightarrow{s18} s521$	
7	re7	3merForm	$s18 + s17 \xrightarrow{s18,\ s17} s20$	
8	re8	WTasyn2LampBind	$s18 + s51 \xrightarrow{s18,\ s51} s85$	
9	re9	AutophagosomeUptakeWTasyn3mer	$s20 \xrightarrow{s20} s520$	
10	re10	4merForm	$s20 + s17 \xrightarrow{s20,\ s17} s24$	
11	re11	3merProtBind	$s20 + s35 \xrightarrow{s20,\ s35} s381$	
12	re12	AutophagosomeUptakeWTasyn4mer	$s24 \xrightarrow{s24} s517$	
13	re13	5merForm	$s24 + s17 \xrightarrow{s24,\ s17} s23$	
14	re14	4merProtBind	$s24 + s35 \xrightarrow{s24,\ s35} s383$	
15	re15	AutophagosomeUptakeWTasyn5mer	$s23 \xrightarrow{s23} s518$	
16	re16	6merForm	$s23 + s17 \xrightarrow{s23,\ s17} s32$	

№	Id	Name	Reaction Equation	SBO
17	re17	5merProtBind	$\mathrm{s23} + \mathrm{s35} \xrightarrow{\mathrm{s23,\ s35}} \mathrm{s385}$	
18	re18	WTasyn5merBindOnLamp	$\mathrm{s23} + \mathrm{s51} \xrightarrow{\mathrm{s23,\ s51}} \mathrm{s496}$	
19	re19	AutophagosomeUptakeWTasyn6mer	$\mathrm{s32} \xrightarrow{\mathrm{s32}} \mathrm{s519}$	
20	re20	7merForm	$\mathrm{s32} + \mathrm{s17} \xrightarrow{\mathrm{s32,\ s17}} \mathrm{s31}$	
21	re21	6merProtBind	$\mathrm{s32} + \mathrm{s35} \xrightarrow{\mathrm{s32,\ s35}} \mathrm{s387}$	
22	re22	AutophagosomeUptakeWTasyn7mer	$\mathrm{s31} \xrightarrow{\mathrm{s31}} \mathrm{s522}$	
23	re23	8merForm	$\mathrm{s31} + \mathrm{s17} \xrightarrow{\mathrm{s31,\ s17}} \mathrm{s30}$	
24	re24	7merProtBind	$\mathrm{s31} + \mathrm{s35} \xrightarrow{\mathrm{s31,\ s35}} \mathrm{s389}$	
25	re25	WTasyn7merBindOnLamp	$\mathrm{s31} + \mathrm{s51} \xrightarrow{\mathrm{s31,\ s51}} \mathrm{s499}$	
26	re26	AutophagosomeUptakeWTasyn8mer	$\mathrm{s30} \xrightarrow{\mathrm{s30}} \mathrm{s523}$	
27	re27	9merForm	$\mathrm{s30} + \mathrm{s17} \xrightarrow{\mathrm{s30,\ s17}} \mathrm{s29}$	
28	re28	8merProtBind	$\mathrm{s30} + \mathrm{s35} \xrightarrow{\mathrm{s30,\ s35}} \mathrm{s391}$	
29	re29	9merProtBind	$\mathrm{s29} + \mathrm{s35} \xrightarrow{\mathrm{s29,\ s35}} \mathrm{s393}$	
30	re30	WTasyn9merBindOnLamp	$\mathrm{s29} + \mathrm{s51} \xrightarrow{\mathrm{s29,\ s51}} \mathrm{s501}$	
31	re31	DopamineDegr	$\mathrm{s22} \xrightarrow{\mathrm{s22}} \mathrm{s200}$	
32	re32	DopMod2merForm	$2\,\mathrm{s7} \xrightarrow{\mathrm{s7}} \mathrm{s6}$	
33	re33	DopWTasyn2merFormOnLamp	$\mathrm{s7} + \mathrm{s536} \xrightarrow{\mathrm{s7,\ s536}} \mathrm{s482}$	
34	re34	DopWTasyn7merFormOnLamp	$\mathrm{s7} + \mathrm{s490} \xrightarrow{\mathrm{s7,\ s490}} \mathrm{s489}$	
35	re35	DopWTasyn8merFormOnLamp	$\mathrm{s7} + \mathrm{s489} \xrightarrow{\mathrm{s7,\ s489}} \mathrm{s492}$	
36	re36	DopWTasyn9merFormOnLamp	$\mathrm{s7} + \mathrm{s492} \xrightarrow{\mathrm{s7,\ s492}} \mathrm{s493}$	

№	Id	Name	Reaction Equation	SBO
37	re37	WTasynLysosUptake	$s78 \xrightarrow{s78} s51 + s52$	
38	re38	WTasyn2LysosUptake	$s85 \xrightarrow{s85} s51 + s53$	
39	re40	M/autophagyWTasyn4Degr	$s517 \xrightarrow{s517} s109$	
40	re41	M/autophagyWTasyn8Degr	$s523 \xrightarrow{s523} s113$	
41	re42	M/autophagyWTasyn3Degr	$s520 \xrightarrow{s520} s108$	
42	re43	M/autophagyWTasyn2Degr	$s521 \xrightarrow{s521} s107$	
43	re44	M/autophagyWTasyn7Degr	$s522 \xrightarrow{s522} s112$	
44	re45	M/autophagyWTasyn5Degr	$s518 \xrightarrow{s518} s110$	
45	re46	M/autophagyWTasyn6Degr	$s519 \xrightarrow{s519} s111$	
46	re47	AggregForm	$s29 + s17 \xrightarrow{s29,\ s17} s33$	
47	re48	DopModAutophagosomeUptake2mer	$s6 \xrightarrow{s6} s527$	
48	re49	DopMod3merForm	$s6 + s7 \xrightarrow{s6,\ s7} s5$	
49	re50	DopModAutophagosomeUptake3mer	$s5 \xrightarrow{s5} s531$	
50	re51	DopMod4merForm	$s5 + s7 \xrightarrow{s5,\ s7} s2$	
51	re52	DopMod3merProtBind	$s5 + s35 \xrightarrow{s5,\ s35} s473$	
52	re53	DopModAutophagosomeUptake4mer	$s2 \xrightarrow{s2} s530$	
53	re54	DopMod5merForm	$s2 + s7 \xrightarrow{s2,\ s7} s1$	
54	re55	DopMod4merProtBind	$s2 + s35 \xrightarrow{s2,\ s35} s474$	
55	re56	DopModAutophagosomeUptake5mer	$s1 \xrightarrow{s1} s529$	
56	re57	DopMod6merForm	$s1 + s7 \xrightarrow{s1,\ s7} s21$	
57	re58	DopMod5merProtBind	$s1 + s35 \xrightarrow{s1,\ s35} s475$	

№	Id	Name	Reaction Equation	SBO
58	re59	DopModAutophagosomeUptake6mer	$s21 \xrightarrow{s21} s528$	
59	re60	DopMod7merForm	$s21 + s7 \xrightarrow{s21,\ s7} s25$	
60	re61	DopMod6merProtBind	$s21 + s35 \xrightarrow{s21,\ s35} s476$	
61	re62	DopModAutophagosomeUptake7mer	$s25 \xrightarrow{s25} s526$	
62	re63	DopMod8merForm	$s25 + s7 \xrightarrow{s25,\ s7} s26$	
63	re64	DopMod7merProtBind	$s25 + s35 \xrightarrow{s25,\ s35} s477$	
64	re65	DopModAutophagosomeUptake8mer	$s26 \xrightarrow{s26} s525$	
65	re66	DopMod9merForm	$s26 + s7 \xrightarrow{s26,\ s7} s27$	
66	re67	DopMod8merProtBind	$s26 + s35 \xrightarrow{s26,\ s35} s478$	
67	re68	DopMod9merProtBind	$s27 + s35 \xrightarrow{s27,\ s35} s479$	
68	re69	WTasyn2merCMADegr	$s53 \xrightarrow{s53} s211$	
69	re70	WTasyn1merCMADegr	$s52 \xrightarrow{s52} s213$	
70	re71	LampFree9merWT	$s501 \xrightarrow{s501} s29 + s51$	
71	re72	DopWTasyn3merFormOnLamp	$s482 + s7 \xrightarrow{s482,\ s7} s483$	
72	re73	DopWTasyn4merFormOnLamp	$s483 + s7 \xrightarrow{s483,\ s7} s484$	
73	re74	DopWTasyn5merFormOnLamp	$s484 + s7 \xrightarrow{s484,\ s7} s491$	
74	re75	DopWTasyn6merFormOnLamp	$s491 + s7 \xrightarrow{s491,\ s7} s490$	
75	re76	LampFree3merWT	$s494 \xrightarrow{s494} s20 + s51$	
76	re77	LampFree4merWT	$s495 \xrightarrow{s495} s24 + s51$	
77	re78	LampFree5merWT	$s496 \xrightarrow{s496} s23 + s51$	

№	Id	Name	Reaction Equation	SBO
78	re79	LampFree6merWT	$\text{s498} \xrightarrow{\text{s498}} \text{s32} + \text{s51}$	
79	re80	LampFree7merWT	$\text{s499} \xrightarrow{\text{s499}} \text{s31} + \text{s51}$	
80	re81	LampFree8merWT	$\text{s500} \xrightarrow{\text{s500}} \text{s30} + \text{s51}$	
81	re82	WTasyn8merBindOnLamp	$\text{s500} + \text{s30} \xrightarrow{\text{s500, s30}} \text{s51}$	
82	re83	WTasyn3merBindOnLamp	$\text{s51} + \text{s20} \xrightarrow{\text{s51, s20}} \text{s494}$	
83	re84	WTasyn4merBindOnLamp	$\text{s51} + \text{s24} \xrightarrow{\text{s51, s24}} \text{s495}$	
84	re85	WTasyn6merBindOnLamp	$\text{s51} + \text{s32} \xrightarrow{\text{s51, s32}} \text{s498}$	
85	re86	DopModWTasynCMAInhibition	$\text{s51} + \text{s7} \xrightarrow{\text{s51, s7}} \text{s536}$	
86	re87	M/autophagyDopModWTasyn4Degr	$\text{s530} \xrightarrow{\text{s530}} \text{s447}$	
87	re88	M/autophagyDopModWTasyn3Degr	$\text{s531} \xrightarrow{\text{s531}} \text{s446}$	
88	re89	M/autophagyDopModWTasyn2Degr	$\text{s527} \xrightarrow{\text{s527}} \text{s445}$	
89	re90	M/autophagyDopModWTasyn5Degr	$\text{s529} \xrightarrow{\text{s529}} \text{s448}$	
90	re91	M/autophagyDopModWTasyn6Degr	$\text{s528} \xrightarrow{\text{s528}} \text{s524}$	
91	re92	M/autophagyDopModWTasyn7Degr	$\text{s526} \xrightarrow{\text{s526}} \text{s524}$	
92	re93	M/autophagyDopModWTasyn8Degr	$\text{s525} \xrightarrow{\text{s525}} \text{s451}$	
93	re94	WTasyn2merFormOnLamp	$\text{s17} + \text{s78} \xrightarrow{\text{s17, s78}} \text{s85}$	
94	re95	WTasyn3merFormOnLamp	$\text{s17} + \text{s85} \xrightarrow{\text{s17, s85}} \text{s494}$	
95	re96	WTasyn4merFormOnLamp	$\text{s17} + \text{s494} \xrightarrow{\text{s17, s494}} \text{s495}$	
96	re97	WTasyn5merFormOnLamp	$\text{s17} + \text{s495} \xrightarrow{\text{s17, s495}} \text{s496}$	
97	re98	WTasyn6merFormOnLamp	$\text{s496} + \text{s17} \xrightarrow{\text{s496, s17}} \text{s498}$	

№	Id	Name	Reaction Equation	SBO
98	re99	WTasyn7merFormOnLamp	$s498 + s17 \xrightarrow{s498,\ s17} s499$	
99	re100	WTasyn8merFormOnLamp	$s17 + s499 \xrightarrow{s17,\ s499} s500$	
100	re101	WTasyn9merFormOnLamp	$s17 + s500 \xrightarrow{s17,\ s500} s501$	
101	re102	ProtFree3merWT	$s381 \xrightarrow{s381} s35$	
102	re103	ProtFree4merWT	$s383 \xrightarrow{s383} s35$	
103	re104	ProtFree5merWT	$s385 \xrightarrow{s385} s35$	
104	re105	ProtFree6merWT	$s387 \xrightarrow{s387} s35$	
105	re106	ProtFree7merWT	$s389 \xrightarrow{s389} s35$	
106	re107	ProtFree8merWT	$s391 \xrightarrow{s391} s35$	
107	re108	ProtFree9merWT	$s393 \xrightarrow{s393} s35$	
108	re109	ProtFree3merDopWT	$s473 \xrightarrow{s473} s35$	
109	re110	ProtFree4merDopWT	$s474 \xrightarrow{s474} s35$	
110	re111	ProtFree5merDopWT	$s475 \xrightarrow{s475} s35$	
111	re112	ProtFree6merDopWT	$s476 \xrightarrow{s476} s35$	
112	re113	ProtFree7merDopWT	$s477 \xrightarrow{s477} s35$	
113	re114	ProtFree8merDopWT	$s478 \xrightarrow{s478} s35$	
114	re115	ProtFree9merDopWT	$s479 \xrightarrow{s479} s35$	
115	re116	WTasynHigherPSCprotInh	$s33 + s35 \xrightarrow{s33,\ s35} s502$	
116	re117	DopMod9merDis	$s27 \xrightarrow{s27} s26 + s7$	
117	re118	DopMod8merDis	$s26 \xrightarrow{s26} s25 + s7$	
118	re119	DopMod7merDis	$s25 \xrightarrow{s25} s21 + s7$	

№	Id	Name	Reaction Equation	SBO
119	re120	DopMod6merDis	$s21 \xrightarrow{s21} s1 + s7$	
120	re121	DopMod4merDis	$s2 \xrightarrow{s2} s5 + s7$	
121	re122	DopMod5merDis	$s1 \xrightarrow{s1} s2 + s7$	
122	re123	DopMod3merDis	$s5 \xrightarrow{s5} s6 + s7$	
123	re124	DopMod2merDis	$s6 \xrightarrow{s6} 2\,s7$	
124	re125	9merDis	$s29 \xrightarrow{s29} s17 + s30$	
125	re126	8merDis	$s30 \xrightarrow{s30} s31 + s17$	
126	re127	7merDis	$s31 \xrightarrow{s31} s32 + s17$	
127	re128	6merDis	$s32 \xrightarrow{s32} s17 + s23$	
128	re129	5merDis	$s23 \xrightarrow{s23} s24 + s17$	
129	re130	4merDis	$s24 \xrightarrow{s24} s20 + s17$	
130	re131	3merDis	$s20 \xrightarrow{s20} s18 + s17$	
131	re132	2merDis	$s18 \xrightarrow{s18} 2\,s17$	
132	re133	AggregGrowth	$s33 + s17 \xrightarrow{s33,\ s17} s33$	
133	re134	AutophagosomeUptakeWTasyn	$s17 \xrightarrow{s17} s533$	
134	re135	M/autophagyWTasyn1Degr	$s533 \xrightarrow{s533} s107$	
135	re136	DopModAutophagosomeUptake	$s7 \xrightarrow{s7} s535$	
136	re137	M/autophagyDopModWTasyn1Degr	$s535 \xrightarrow{s535} s445$	

7.1 Reaction re1

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

Name WTasynSynthesis

Reaction equation

$$\mathrm{s3} \xrightarrow{\mathrm{s3}} \mathrm{s17} \tag{4}$$

Reactant

Table 6: Properties of each reactant.

Id	Name	SBO
s3	SOURCE	

Modifier

Table 7: Properties of each modifier.

Id	Name	SBO
s3	SOURCE	

Product

Table 8: Properties of each product.

Id	Name	SBO
s17	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_1 = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k1} \cdot \mathrm{s3} \tag{5}$$

Table 9: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		0.029		☑

7.2 Reaction re2

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

Name DopProduction

Reaction equation

$$\mathrm{s3} \xrightarrow{\mathrm{s3}} \mathrm{s22} \tag{6}$$

Reactant

Table 10: Properties of each reactant.

Id	Name	SBO
s3	SOURCE	

Modifier

Table 11: Properties of each modifier.

Id	Name	SBO
s3	SOURCE	

Product

Table 12: Properties of each product.

Id	Name	SBO
s22	Dopamine	

Kinetic Law

Derived unit contains undeclared units

$$v_2 = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k1} \cdot \mathrm{s3} \tag{7}$$

Table 13: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		0.079		☑

7.3 Reaction re3

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

Name 2merForm

Reaction equation

$$2\,\mathrm{s17} \xrightarrow{\mathrm{s17}} \mathrm{s18} \tag{8}$$

Reactant

Table 14: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	

Modifier

Table 15: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	

Product

Table 16: Properties of each product.

Id	Name	SBO
s18	WTasyn2	

Kinetic Law

Derived unit contains undeclared units

$$v_3 = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_2merForm} \cdot \mathrm{s17}^2 \tag{9}$$

7.4 Reaction re4

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

Name WTasynDopModification

Reaction equation

$$\mathrm{s17} + \mathrm{s22} \xrightarrow{\mathrm{s17,\ s22}} \mathrm{s7} \tag{10}$$

Reactants

Table 17: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	
s22	Dopamine	

Modifiers

Table 18: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	
s22	Dopamine	

Product

Table 19: Properties of each product.

Id	Name	SBO
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_4 = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k1} \cdot \mathrm{s17} \cdot \mathrm{s22} \tag{11}$$

Table 20: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		$6.74768 \cdot 10^{-7}$		☑

7.5 Reaction re5

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

Name WTasynLampBind

Reaction equation

$$\mathrm{s17} + \mathrm{s51} \xrightarrow{\mathrm{s17,\ s51}} \mathrm{s78} \tag{12}$$

Reactants

Table 21: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	
s51	Lamp2a	

Modifiers

Table 22: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	
s51	Lamp2a	

Product

Table 23: Properties of each product.

Id	Name	SBO
s78	WTasyndegr	

Kinetic Law

Derived unit contains undeclared units

$$v_5 = \mathrm{k\_WTasyn1\_2merBindOnLamp} \cdot \mathrm{s17} \cdot \mathrm{s51} \tag{13}$$

7.6 Reaction re6

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

Name AutophagosomeUptakeWTasyn2mer

Reaction equation

$$\text{s18} \xrightarrow{\text{s18}} \text{s521} \tag{14}$$

Reactant

Table 24: Properties of each reactant.

Id	Name	SBO
s18	WTasyn2	

Modifier

Table 25: Properties of each modifier.

Id	Name	SBO
s18	WTasyn2	

Product

Table 26: Properties of each product.

Id	Name	SBO
s521	WTasyn2	

Kinetic Law

Derived unit contains undeclared units

$$v_6 = \text{k\_OligAutophagUptake} \cdot \text{s18} \tag{15}$$

7.7 Reaction re7

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

Name 3merForm

Reaction equation

$$\text{s18} + \text{s17} \xrightarrow{\text{s18, s17}} \text{s20} \tag{16}$$

Reactants

Table 27: Properties of each reactant.

Id	Name	SBO
s18	WTasyn2	
s17	WTasyn	

Modifiers

Table 28: Properties of each modifier.

Id	Name	SBO
s18	WTasyn2	
s17	WTasyn	

Product

Table 29: Properties of each product.

Id	Name	SBO
s20	WTasyn3	

Kinetic Law

Derived unit contains undeclared units

$$v_7 = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s18} \cdot \mathrm{s17} \tag{17}$$

7.8 Reaction re8

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

Name WTasyn2LampBind

Reaction equation

$$\mathrm{s18} + \mathrm{s51} \xrightarrow{\mathrm{s18,\ s51}} \mathrm{s85} \tag{18}$$

Reactants

Table 30: Properties of each reactant.

Id	Name	SBO
s18	WTasyn2	
s51	Lamp2a	

Modifiers

Table 31: Properties of each modifier.

Id	Name	SBO
s18	WTasyn2	
s51	Lamp2a	

Product

Table 32: Properties of each product.

Id	Name	SBO
s85	WTasyn2degr	

Kinetic Law

Derived unit contains undeclared units

$$v_8 = \text{k\_WTasyn1\_2merBindOnLamp} \cdot \text{s18} \cdot \text{s51} \tag{19}$$

7.9 Reaction re9

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

Name AutophagosomeUptakeWTasyn3mer

Reaction equation

$$\text{s20} \xrightarrow{\text{s20}} \text{s520} \tag{20}$$

Reactant

Table 33: Properties of each reactant.

Id	Name	SBO
s20	WTasyn3	

Modifier

Table 34: Properties of each modifier.

Id	Name	SBO
s20	WTasyn3	

Product

Table 35: Properties of each product.

Id	Name	SBO
s520	WTasyn3	

Kinetic Law

Derived unit contains undeclared units

$$v_9 = \text{k\_OligAutophagUptake} \cdot \text{s20} \tag{21}$$

7.10 Reaction re10

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

Name 4merForm

Reaction equation

$$\text{s20} + \text{s17} \xrightarrow{\text{s20, s17}} \text{s24} \tag{22}$$

Reactants

Table 36: Properties of each reactant.

Id	Name	SBO
s20	WTasyn3	
s17	WTasyn	

Modifiers

Table 37: Properties of each modifier.

Id	Name	SBO
s20	WTasyn3	
s17	WTasyn	

Product

Table 38: Properties of each product.

Id	Name	SBO
s24	WTasyn4	

Kinetic Law

Derived unit contains undeclared units

$$v_{10} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s20} \cdot \mathrm{s17} \tag{23}$$

7.11 Reaction re11

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

Name 3merProtBind

Reaction equation

$$\mathrm{s20} + \mathrm{s35} \xrightarrow{\mathrm{s20,\ s35}} \mathrm{s381} \tag{24}$$

Reactants

Table 39: Properties of each reactant.

Id	Name	SBO
s20	WTasyn3	
s35	Proteasome	

Modifiers

Table 40: Properties of each modifier.

Id	Name	SBO
s20	WTasyn3	
s35	Proteasome	

Product

Table 41: Properties of each product.

Id	Name	SBO
s381	ProtWTasyn3	

Kinetic Law

Derived unit contains undeclared units

$$v_{11} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s20} \cdot \mathrm{s35} \tag{25}$$

7.12 Reaction re12

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

Name AutophagosomeUptakeWTasyn4mer

Reaction equation

$$\mathrm{s24} \xrightarrow{\mathrm{s24}} \mathrm{s517} \tag{26}$$

Reactant

Table 42: Properties of each reactant.

Id	Name	SBO
s24	WTasyn4	

Modifier

Table 43: Properties of each modifier.

Id	Name	SBO
s24	WTasyn4	

Product

Table 44: Properties of each product.

Id	Name	SBO
s517	WTasyn4	

Kinetic Law

Derived unit contains undeclared units

$$v_{12} = \text{k\_OligAutophagUptake} \cdot \text{s24} \tag{27}$$

7.13 Reaction re13

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

Name 5merForm

Reaction equation

$$\text{s24} + \text{s17} \xrightarrow{\text{s24, s17}} \text{s23} \tag{28}$$

Reactants

Table 45: Properties of each reactant.

Id	Name	SBO
s24	WTasyn4	
s17	WTasyn	

Modifiers

Table 46: Properties of each modifier.

Id	Name	SBO
s24	WTasyn4	
s17	WTasyn	

Product

Table 47: Properties of each product.

Id	Name	SBO
s23	WTasyn5	

Kinetic Law

Derived unit contains undeclared units

$$v_{13} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s24} \cdot \mathrm{s17} \tag{29}$$

7.14 Reaction re14

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

Name 4merProtBind

Reaction equation

$$\mathrm{s24} + \mathrm{s35} \xrightarrow{\mathrm{s24,\ s35}} \mathrm{s383} \tag{30}$$

Reactants

Table 48: Properties of each reactant.

Id	Name	SBO
s24	WTasyn4	
s35	Proteasome	

Modifiers

Table 49: Properties of each modifier.

Id	Name	SBO
s24	WTasyn4	
s35	Proteasome	

Product

Table 50: Properties of each product.

Id	Name	SBO
s383	ProtWTasyn4	

Kinetic Law

Derived unit contains undeclared units

$$v_{14} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s24} \cdot \mathrm{s35} \tag{31}$$

7.15 Reaction re15

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

Name AutophagosomeUptakeWTasyn5mer

Reaction equation

$$\mathrm{s23} \xrightarrow{\mathrm{s23}} \mathrm{s518} \tag{32}$$

Reactant

Table 51: Properties of each reactant.

Id	Name	SBO
s23	WTasyn5	

Modifier

Table 52: Properties of each modifier.

Id	Name	SBO
s23	WTasyn5	

Product

Table 53: Properties of each product.

Id	Name	SBO
s518	WTasyn5	

Kinetic Law

Derived unit contains undeclared units

$$v_{15} = \text{k\_OligAutophagUptake} \cdot \text{s23} \tag{33}$$

7.16 Reaction re16

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

Name 6merForm

Reaction equation

$$\text{s23} + \text{s17} \xrightarrow{\text{s23, s17}} \text{s32} \tag{34}$$

Reactants

Table 54: Properties of each reactant.

Id	Name	SBO
s23	WTasyn5	
s17	WTasyn	

Modifiers

Table 55: Properties of each modifier.

Id	Name	SBO
s23	WTasyn5	
s17	WTasyn	

Product

Table 56: Properties of each product.

Id	Name	SBO
s32	WTasyn6	

Kinetic Law

Derived unit contains undeclared units

$$v_{16} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s23} \cdot \mathrm{s17} \tag{35}$$

7.17 Reaction re17

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

Name 5merProtBind

Reaction equation

$$\mathrm{s23} + \mathrm{s35} \xrightarrow{\mathrm{s23,\ s35}} \mathrm{s385} \tag{36}$$

Reactants

Table 57: Properties of each reactant.

Id	Name	SBO
s23	WTasyn5	
s35	Proteasome	

Modifiers

Table 58: Properties of each modifier.

Id	Name	SBO
s23	WTasyn5	
s35	Proteasome	

Product

Table 59: Properties of each product.

Id	Name	SBO
s385	ProtWTasyn5	

Kinetic Law

Derived unit contains undeclared units

$$v_{17} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s23} \cdot \mathrm{s35} \tag{37}$$

7.18 Reaction re18

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

Name WTasyn5merBindOnLamp

Reaction equation

$$\mathrm{s23} + \mathrm{s51} \xrightarrow{\mathrm{s23,\ s51}} \mathrm{s496} \tag{38}$$

Reactants

Table 60: Properties of each reactant.

Id	Name	SBO
s23	WTasyn5	
s51	Lamp2a	

Modifiers

Table 61: Properties of each modifier.

Id	Name	SBO
s23	WTasyn5	
s51	Lamp2a	

Product

Table 62: Properties of each product.

Id	Name	SBO
s496	WTasyn5merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{18} = \text{k\_WTOligBindOnLamp} \cdot \text{s23} \cdot \text{s51} \tag{39}$$

7.19 Reaction re19

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

Name AutophagosomeUptakeWTasyn6mer

Reaction equation

$$\text{s32} \xrightarrow{\text{s32}} \text{s519} \tag{40}$$

Reactant

Table 63: Properties of each reactant.

Id	Name	SBO
s32	WTasyn6	

Modifier

Table 64: Properties of each modifier.

Id	Name	SBO
s32	WTasyn6	

Id	Name	SBO

Product

Table 65: Properties of each product.

Id	Name	SBO
s519	WTasyn6	

Kinetic Law

Derived unit contains undeclared units

$$v_{19} = \text{k\_OligAutophagUptake} \cdot \text{s32} \tag{41}$$

7.20 Reaction re20

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

Name 7merForm

Reaction equation

$$\text{s32} + \text{s17} \xrightarrow{\text{s32, s17}} \text{s31} \tag{42}$$

Reactants

Table 66: Properties of each reactant.

Id	Name	SBO
s32	WTasyn6	
s17	WTasyn	

Modifiers

Table 67: Properties of each modifier.

Id	Name	SBO
s32	WTasyn6	
s17	WTasyn	

Product

Table 68: Properties of each product.

Id	Name	SBO
s31	WTasyn7	

Kinetic Law

Derived unit contains undeclared units

$$v_{20} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s32} \cdot \mathrm{s17} \tag{43}$$

7.21 Reaction re21

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

Name 6merProtBind

Reaction equation

$$\mathrm{s32} + \mathrm{s35} \xrightarrow{\mathrm{s32,\ s35}} \mathrm{s387} \tag{44}$$

Reactants

Table 69: Properties of each reactant.

Id	Name	SBO
s32	WTasyn6	
s35	Proteasome	

Modifiers

Table 70: Properties of each modifier.

Id	Name	SBO
s32	WTasyn6	
s35	Proteasome	

Product

Table 71: Properties of each product.

Id	Name	SBO
s387	ProtWTasyn6	

Kinetic Law

Derived unit contains undeclared units

$$v_{21} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s32} \cdot \mathrm{s35} \tag{45}$$

7.22 Reaction re22

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

Name AutophagosomeUptakeWTasyn7mer

Reaction equation

$$\mathrm{s31} \xrightarrow{\mathrm{s31}} \mathrm{s522} \tag{46}$$

Reactant

Table 72: Properties of each reactant.

Id	Name	SBO
s31	WTasyn7	

Modifier

Table 73: Properties of each modifier.

Id	Name	SBO
s31	WTasyn7	

Product

Table 74: Properties of each product.

Id	Name	SBO
s522	WTasyn7	

Kinetic Law

Derived unit contains undeclared units

$$v_{22} = \text{k\_OligAutophagUptake} \cdot \text{s31} \tag{47}$$

7.23 Reaction re23

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

Name 8merForm

Reaction equation

$$\text{s31} + \text{s17} \xrightarrow{\text{s31, s17}} \text{s30} \tag{48}$$

Reactants

Table 75: Properties of each reactant.

Id	Name	SBO
s31	WTasyn7	
s17	WTasyn	

Modifiers

Table 76: Properties of each modifier.

Id	Name	SBO
s31	WTasyn7	
s17	WTasyn	

Product

Table 77: Properties of each product.

Id	Name	SBO
s30	WTasyn8	

Kinetic Law

Derived unit contains undeclared units

$$v_{23} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s31} \cdot \mathrm{s17} \tag{49}$$

7.24 Reaction re24

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

Name 7merProtBind

Reaction equation

$$\mathrm{s31} + \mathrm{s35} \xrightarrow{\mathrm{s31,\ s35}} \mathrm{s389} \tag{50}$$

Reactants

Table 78: Properties of each reactant.

Id	Name	SBO
s31	WTasyn7	
s35	Proteasome	

Modifiers

Table 79: Properties of each modifier.

Id	Name	SBO
s31	WTasyn7	
s35	Proteasome	

Product

Table 80: Properties of each product.

Id	Name	SBO
s389	ProtWTasyn7	

Kinetic Law

Derived unit contains undeclared units

$$v_{24} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s31} \cdot \mathrm{s35} \tag{51}$$

7.25 Reaction re25

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

Name WTasyn7merBindOnLamp

Reaction equation

$$\mathrm{s31} + \mathrm{s51} \xrightarrow{\mathrm{s31,\ s51}} \mathrm{s499} \tag{52}$$

Reactants

Table 81: Properties of each reactant.

Id	Name	SBO
s31	WTasyn7	
s51	Lamp2a	

Modifiers

Table 82: Properties of each modifier.

Id	Name	SBO
s31	WTasyn7	
s51	Lamp2a	

Product

Table 83: Properties of each product.

Id	Name	SBO
s499	WTasyn7merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{25} = \mathrm{k\_WTOligBindOnLamp} \cdot \mathrm{s31} \cdot \mathrm{s51} \tag{53}$$

7.26 Reaction re26

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

Name AutophagosomeUptakeWTasyn8mer

Reaction equation

$$\text{s30} \xrightarrow{\text{s30}} \text{s523} \tag{54}$$

Reactant

Table 84: Properties of each reactant.

Id	Name	SBO
s30	WTasyn8	

Modifier

Table 85: Properties of each modifier.

Id	Name	SBO
s30	WTasyn8	

Product

Table 86: Properties of each product.

Id	Name	SBO
s523	WTasyn8	

Kinetic Law

Derived unit contains undeclared units

$$v_{26} = \text{k\_OligAutophagUptake} \cdot \text{s30} \tag{55}$$

7.27 Reaction re27

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

Name 9merForm

Reaction equation

$$\text{s30} + \text{s17} \xrightarrow{\text{s30, s17}} \text{s29} \tag{56}$$

Reactants

Table 87: Properties of each reactant.

Id	Name	SBO
s30	WTasyn8	
s17	WTasyn	

Modifiers

Table 88: Properties of each modifier.

Id	Name	SBO
s30	WTasyn8	
s17	WTasyn	

Product

Table 89: Properties of each product.

Id	Name	SBO
s29	WTasyn9	

Kinetic Law

Derived unit contains undeclared units

$$v_{27} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s30} \cdot \mathrm{s17} \tag{57}$$

7.28 Reaction re28

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

Name 8merProtBind

Reaction equation

$$\mathrm{s30} + \mathrm{s35} \xrightarrow{\mathrm{s30,\ s35}} \mathrm{s391} \tag{58}$$

Reactants

Table 90: Properties of each reactant.

Id	Name	SBO
s30	WTasyn8	
s35	Proteasome	

Modifiers

Table 91: Properties of each modifier.

Id	Name	SBO
s30	WTasyn8	
s35	Proteasome	

Product

Table 92: Properties of each product.

Id	Name	SBO
s391	ProtWTasyn8	

Kinetic Law

Derived unit contains undeclared units

$$v_{28} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s30} \cdot \mathrm{s35} \tag{59}$$

7.29 Reaction re29

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

Name 9merProtBind

Reaction equation

$$\mathrm{s29} + \mathrm{s35} \xrightarrow{\mathrm{s29,\ s35}} \mathrm{s393} \tag{60}$$

Reactants

Table 93: Properties of each reactant.

Id	Name	SBO
s29	WTasyn9	
s35	Proteasome	

Modifiers

Table 94: Properties of each modifier.

Id	Name	SBO
s29	WTasyn9	
s35	Proteasome	

Product

Table 95: Properties of each product.

Id	Name	SBO
s393	ProtWTasyn9	

Kinetic Law

Derived unit contains undeclared units

$$v_{29} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s29} \cdot \mathrm{s35} \tag{61}$$

7.30 Reaction re30

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

Name WTasyn9merBindOnLamp

Reaction equation

$$\mathrm{s29} + \mathrm{s51} \xrightarrow{\mathrm{s29,\ s51}} \mathrm{s501} \tag{62}$$

Reactants

Table 96: Properties of each reactant.

Id	Name	SBO
s29	WTasyn9	
s51	Lamp2a	

Modifiers

Table 97: Properties of each modifier.

Id	Name	SBO
s29	WTasyn9	
s51	Lamp2a	

Product

Table 98: Properties of each product.

Id	Name	SBO
s501	WTasyn9merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{30} = \text{k\_WTOligBindOnLamp} \cdot \text{s29} \cdot \text{s51} \tag{63}$$

7.31 Reaction re31

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

Name DopamineDegr

Reaction equation

$$\text{s22} \xrightarrow{\text{s22}} \text{s200} \tag{64}$$

Reactant

Table 99: Properties of each reactant.

Id	Name	SBO
s22	Dopamine	

Modifier

Table 100: Properties of each modifier.

Id	Name	SBO
s22	Dopamine	

Product

Table 101: Properties of each product.

Id	Name	SBO
s200	Dopamine_degraded	

Kinetic Law

Derived unit contains undeclared units

$$v_{31} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k1} \cdot \mathrm{s22} \tag{65}$$

Table 102: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		0.007		☑

7.32 Reaction re32

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

Name DopMod2merForm

Reaction equation

$$2\,\mathrm{s7} \xrightarrow{\mathrm{s7}} \mathrm{s6} \tag{66}$$

Reactant

Table 103: Properties of each reactant.

Id	Name	SBO
s7	DopModWTasyn	

Modifier

Table 104: Properties of each modifier.

Id	Name	SBO
s7	DopModWTasyn	

Product

Table 105: Properties of each product.

Id	Name	SBO
s6	DopModWTasyn2	

Kinetic Law

Derived unit contains undeclared units

$$v_{32} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_2merForm} \cdot \mathrm{s7}^2 \tag{67}$$

7.33 Reaction re33

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

Name DopWTasyn2merFormOnLamp

Reaction equation

$$\mathrm{s7} + \mathrm{s536} \xrightarrow{\mathrm{s7,\ s536}} \mathrm{s482} \tag{68}$$

Reactants

Table 106: Properties of each reactant.

Id	Name	SBO
s7	DopModWTasyn	
s536	DopModWTasynOnLamp	

Modifiers

Table 107: Properties of each modifier.

Id	Name	SBO
s7	DopModWTasyn	
s536	DopModWTasynOnLamp	

Product

Table 108: Properties of each product.

Id	Name	SBO
s482	DopModWTasyn2merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{33} = \text{k\_2merForm} \cdot \text{s7} \cdot \text{s536} \tag{69}$$

7.34 Reaction re34

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

Name DopWTasyn7merFormOnLamp

Reaction equation

$$\text{s7} + \text{s490} \xrightarrow{\text{s7, s490}} \text{s489} \tag{70}$$

Reactants

Table 109: Properties of each reactant.

Id	Name	SBO
s7	DopModWTasyn	
s490	DopModWTasyn6merOnLamp	

Modifiers

Table 110: Properties of each modifier.

Id	Name	SBO
s7	DopModWTasyn	
s490	DopModWTasyn6merOnLamp	

Product

Table 111: Properties of each product.

Id	Name	SBO
s489	DopModWTasyn7merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{34} = \text{k\_OligomerForm} \cdot \text{s7} \cdot \text{s490} \tag{71}$$

7.35 Reaction re35

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

Name DopWTasyn8merFormOnLamp

Reaction equation

$$\text{s7} + \text{s489} \xrightarrow{\text{s7, s489}} \text{s492} \tag{72}$$

Reactants

Table 112: Properties of each reactant.

Id	Name	SBO
s7	DopModWTasyn	
s489	DopModWTasyn7merOnLamp	

Modifiers

Table 113: Properties of each modifier.

Id	Name	SBO
s7	DopModWTasyn	
s489	DopModWTasyn7merOnLamp	

Product

Table 114: Properties of each product.

Id	Name	SBO
s492	DopModWTasyn8merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{35} = \text{k\_OligomerForm} \cdot \text{s7} \cdot \text{s489} \tag{73}$$

7.36 Reaction re36

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

Name DopWTasyn9merFormOnLamp

Reaction equation

$$\text{s7} + \text{s492} \xrightarrow{\text{s7, s492}} \text{s493} \tag{74}$$

Reactants

Table 115: Properties of each reactant.

Id	Name	SBO
s7	DopModWTasyn	
s492	DopModWTasyn8merOnLamp	

Modifiers

Table 116: Properties of each modifier.

Id	Name	SBO
s7	DopModWTasyn	
s492	DopModWTasyn8merOnLamp	

Product

Table 117: Properties of each product.

Id	Name	SBO
s493	DopModWTasyn9merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{36} = \text{k\_OligomerForm} \cdot \text{s7} \cdot \text{s492} \tag{75}$$

7.37 Reaction re37

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

Name WTasynLysosUptake

Reaction equation

$$\text{s78} \xrightarrow{\text{s78}} \text{s51} + \text{s52} \tag{76}$$

Reactant

Table 118: Properties of each reactant.

Id	Name	SBO
s78	WTasyndegr	

Modifier

Table 119: Properties of each modifier.

Id	Name	SBO
s78	WTasyndegr	

Products

Table 120: Properties of each product.

Id	Name	SBO
s51	Lamp2a	
s52	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{37} = \mathrm{vol}\,(\mathrm{c3}) \cdot \mathrm{k1} \cdot \mathrm{s78} \tag{77}$$

Table 121: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		0.010		☑

7.38 Reaction re38

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

Name WTasyn2LysosUptake

Reaction equation

$$\mathrm{s85} \xrightarrow{\mathrm{s85}} \mathrm{s51} + \mathrm{s53} \tag{78}$$

Reactant

Table 122: Properties of each reactant.

Id	Name	SBO
s85	WTasyn2degr	

Modifier

Table 123: Properties of each modifier.

Id	Name	SBO
s85	WTasyn2degr	

Products

Table 124: Properties of each product.

Id	Name	SBO
s51	Lamp2a	
s53	WTasyn2	

Kinetic Law

Derived unit contains undeclared units

$$v_{38} = \mathrm{vol}\,(\mathrm{c3}) \cdot \mathrm{k1} \cdot \mathrm{s85} \tag{79}$$

Table 125: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		0.010		☑

7.39 Reaction re40

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

Name M/autophagyWTasyn4Degr

Reaction equation

$$\text{s517} \xrightarrow{\text{s517}} \text{s109} \tag{80}$$

Reactant

Table 126: Properties of each reactant.

Id	Name	SBO
s517	WTasyn4	

Modifier

Table 127: Properties of each modifier.

Id	Name	SBO
s517	WTasyn4	

Product

Table 128: Properties of each product.

Id	Name	SBO
s109	WTasyn4merM/Adegrr	

Kinetic Law

Derived unit contains undeclared units

$$v_{39} = \text{vol}\,(\text{c2}) \cdot \text{k\_M\_autophagyDegr} \cdot \text{s517} \tag{81}$$

7.40 Reaction re41

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

Name M/autophagyWTasyn8Degr

Reaction equation

$$\text{s523} \xrightarrow{\text{s523}} \text{s113} \tag{82}$$

Reactant

Table 129: Properties of each reactant.

Id	Name	SBO
s523	WTasyn8	

Modifier

Table 130: Properties of each modifier.

Id	Name	SBO
s523	WTasyn8	

Product

Table 131: Properties of each product.

Id	Name	SBO
s113	WTasyn8merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{40} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s523} \tag{83}$$

7.41 Reaction re42

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

Name M/autophagyWTasyn3Degr

Reaction equation

$$\mathrm{s520} \xrightarrow{\mathrm{s520}} \mathrm{s108} \tag{84}$$

Reactant

Table 132: Properties of each reactant.

Id	Name	SBO
s520	WTasyn3	

Modifier

Table 133: Properties of each modifier.

Id	Name	SBO
s520	WTasyn3	

Product

Table 134: Properties of each product.

Id	Name	SBO
s108	WTasyn3merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{41} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s520} \tag{85}$$

7.42 Reaction re43

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

Name M/autophagyWTasyn2Degr

Reaction equation

$$\mathrm{s521} \xrightarrow{\mathrm{s521}} \mathrm{s107} \tag{86}$$

Reactant

Table 135: Properties of each reactant.

Id	Name	SBO
s521	WTasyn2	

Modifier

Table 136: Properties of each modifier.

Id	Name	SBO
s521	WTasyn2	

Product

Table 137: Properties of each product.

Id	Name	SBO
s107	WTasyn2merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{42} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s521} \tag{87}$$

7.43 Reaction re44

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

Name M/autophagyWTasyn7Degr

Reaction equation

$$\mathrm{s522} \xrightarrow{\mathrm{s522}} \mathrm{s112} \tag{88}$$

Reactant

Table 138: Properties of each reactant.

Id	Name	SBO
s522	WTasyn7	

Modifier

Table 139: Properties of each modifier.

Id	Name	SBO
s522	WTasyn7	

Product

Table 140: Properties of each product.

Id	Name	SBO
s112	WTasyn7merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{43} = \mathrm{vol}(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s522} \tag{89}$$

7.44 Reaction re45

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

Name M/autophagyWTasyn5Degr

Reaction equation

$$\mathrm{s518} \xrightarrow{\mathrm{s518}} \mathrm{s110} \tag{90}$$

Reactant

Table 141: Properties of each reactant.

Id	Name	SBO
s518	WTasyn5	

Modifier

Table 142: Properties of each modifier.

Id	Name	SBO
s518	WTasyn5	

Product

Table 143: Properties of each product.

Id	Name	SBO
s110	WTasyn5merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{44} = \mathrm{vol}(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s518} \tag{91}$$

7.45 Reaction re46

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

Name M/autophagyWTasyn6Degr

Reaction equation

$$\mathrm{s519} \xrightarrow{\mathrm{s519}} \mathrm{s111} \tag{92}$$

Reactant

Table 144: Properties of each reactant.

Id	Name	SBO
s519	WTasyn6	

Modifier

Table 145: Properties of each modifier.

Id	Name	SBO
s519	WTasyn6	

Product

Table 146: Properties of each product.

Id	Name	SBO
s111	WTasyn6merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{45} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s519} \tag{93}$$

7.46 Reaction re47

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

Name AggregForm

Reaction equation

$$\mathrm{s29} + \mathrm{s17} \xrightarrow{\mathrm{s29,\ s17}} \mathrm{s33} \tag{94}$$

Reactants

Table 147: Properties of each reactant.

Id	Name	SBO
s29	WTasyn9	
s17	WTasyn	

Modifiers

Table 148: Properties of each modifier.

Id	Name	SBO
s29	WTasyn9	
s17	WTasyn	

Product

Table 149: Properties of each product.

Id	Name	SBO
s33	HigherWTasynSPC	

Kinetic Law

Derived unit contains undeclared units

$$v_{46} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s29} \cdot \mathrm{s17} \tag{95}$$

7.47 Reaction re48

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

Name DopModAutophagosomeUptake2mer

Reaction equation

$$\mathrm{s6} \xrightarrow{\mathrm{s6}} \mathrm{s527} \tag{96}$$

Reactant

Table 150: Properties of each reactant.

Id	Name	SBO
s6	DopModWTasyn2	

Modifier

Table 151: Properties of each modifier.

Id	Name	SBO
s6	DopModWTasyn2	

Product

Table 152: Properties of each product.

Id	Name	SBO
s527	DopModWTasyn2	

Kinetic Law

Derived unit contains undeclared units

$$v_{47} = \mathrm{k\_OligAutophagUptake} \cdot \mathrm{s6} \tag{97}$$

7.48 Reaction re49

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

Name DopMod3merForm

Reaction equation

$$\mathrm{s6} + \mathrm{s7} \xrightarrow{\mathrm{s6,\ s7}} \mathrm{s5} \tag{98}$$

Reactants

Table 153: Properties of each reactant.

Id	Name	SBO
s6	DopModWTasyn2	
s7	DopModWTasyn	

Modifiers

Table 154: Properties of each modifier.

Id	Name	SBO
s6	DopModWTasyn2	
s7	DopModWTasyn	

Product

Table 155: Properties of each product.

Id	Name	SBO
s5	DopModWTasyn3	

Kinetic Law

Derived unit contains undeclared units

$$v_{48} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s6} \cdot \mathrm{s7} \tag{99}$$

7.49 Reaction re50

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

Name DopModAutophagosomeUptake3mer

Reaction equation

$$\mathrm{s5} \xrightarrow{\mathrm{s5}} \mathrm{s531} \tag{100}$$

Reactant

Table 156: Properties of each reactant.

Id	Name	SBO
s5	DopModWTasyn3	

Modifier

Table 157: Properties of each modifier.

Id	Name	SBO
s5	DopModWTasyn3	

Product

Table 158: Properties of each product.

Id	Name	SBO
s531	DopModWTasyn3	

Kinetic Law

Derived unit contains undeclared units

$$v_{49} = \mathrm{k\_OligAutophagUptake} \cdot \mathrm{s5} \tag{101}$$

7.50 Reaction re51

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

Name DopMod4merForm

Reaction equation

$$\mathrm{s5} + \mathrm{s7} \xrightarrow{\mathrm{s5,\ s7}} \mathrm{s2} \tag{102}$$

Reactants

Table 159: Properties of each reactant.

Id	Name	SBO
s5	DopModWTasyn3	
s7	DopModWTasyn	

Modifiers

Table 160: Properties of each modifier.

Id	Name	SBO
s5	DopModWTasyn3	
s7	DopModWTasyn	

Product

Table 161: Properties of each product.

Id	Name	SBO
s2	DopModWTasyn4	

Kinetic Law

Derived unit contains undeclared units

$$v_{50} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s5} \cdot \mathrm{s7} \tag{103}$$

7.51 Reaction re52

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

Name DopMod3merProtBind

Reaction equation

$$\mathrm{s5} + \mathrm{s35} \xrightarrow{\mathrm{s5,\ s35}} \mathrm{s473} \tag{104}$$

Reactants

Table 162: Properties of each reactant.

Id	Name	SBO
s5	DopModWTasyn3	
s35	Proteasome	

Modifiers

Table 163: Properties of each modifier.

Id	Name	SBO
s5	DopModWTasyn3	
s35	Proteasome	

Product

Table 164: Properties of each product.

Id	Name	SBO
s473	ProtDopModWTasyn3	

Kinetic Law

Derived unit contains undeclared units

$$v_{51} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s5} \cdot \mathrm{s35} \tag{105}$$

7.52 Reaction re53

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

Name DopModAutophagosomeUptake4mer

Reaction equation

$$\mathrm{s2} \xrightarrow{\mathrm{s2}} \mathrm{s530} \tag{106}$$

Reactant

Table 165: Properties of each reactant.

Id	Name	SBO
s2	DopModWTasyn4	

Modifier

Table 166: Properties of each modifier.

Id	Name	SBO
s2	DopModWTasyn4	

Product

Table 167: Properties of each product.

Id	Name	SBO
s530	DopModWTasyn4	

Kinetic Law

Derived unit contains undeclared units

$$v_{52} = \text{k\_OligAutophagUptake} \cdot \text{s2} \tag{107}$$

7.53 Reaction re54

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

Name DopMod5merForm

Reaction equation

$$\text{s2} + \text{s7} \xrightarrow{\text{s2, s7}} \text{s1} \tag{108}$$

Reactants

Table 168: Properties of each reactant.

Id	Name	SBO
s2	DopModWTasyn4	
s7	DopModWTasyn	

Modifiers

Table 169: Properties of each modifier.

Id	Name	SBO
s2	DopModWTasyn4	
s7	DopModWTasyn	

Product

Table 170: Properties of each product.

Id	Name	SBO
s1	DopModWTasyn5	

Kinetic Law

Derived unit contains undeclared units

$$v_{53} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s2} \cdot \mathrm{s7} \tag{109}$$

7.54 Reaction re55

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

Name DopMod4merProtBind

Reaction equation

$$\mathrm{s2} + \mathrm{s35} \xrightarrow{\mathrm{s2,\ s35}} \mathrm{s474} \tag{110}$$

Reactants

Table 171: Properties of each reactant.

Id	Name	SBO
s2	DopModWTasyn4	
s35	Proteasome	

Modifiers

Table 172: Properties of each modifier.

Id	Name	SBO
s2	DopModWTasyn4	
s35	Proteasome	

Product

Table 173: Properties of each product.

Id	Name	SBO
s474	ProtDopModWTasyn4	

Kinetic Law

Derived unit contains undeclared units

$$v_{54} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s2} \cdot \mathrm{s35} \tag{111}$$

7.55 Reaction re56

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

Name DopModAutophagosomeUptake5mer

Reaction equation

$$\mathrm{s1} \xrightarrow{\mathrm{s1}} \mathrm{s529} \tag{112}$$

Reactant

Table 174: Properties of each reactant.

Id	Name	SBO
s1	DopModWTasyn5	

Modifier

Table 175: Properties of each modifier.

Id	Name	SBO
s1	DopModWTasyn5	

Product

Table 176: Properties of each product.

Id	Name	SBO
s529	DopModWTasyn5	

Kinetic Law

Derived unit contains undeclared units

$$v_{55} = \text{k\_OligAutophagUptake} \cdot \text{s1} \tag{113}$$

7.56 Reaction re57

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

Name DopMod6merForm

Reaction equation

$$\text{s1} + \text{s7} \xrightarrow{\text{s1, s7}} \text{s21} \tag{114}$$

Reactants

Table 177: Properties of each reactant.

Id	Name	SBO
s1	DopModWTasyn5	
s7	DopModWTasyn	

Modifiers

Table 178: Properties of each modifier.

Id	Name	SBO
s1	DopModWTasyn5	
s7	DopModWTasyn	

Product

Table 179: Properties of each product.

Id	Name	SBO
s21	DopModWTasyn6	

Kinetic Law

Derived unit contains undeclared units

$$v_{56} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s1} \cdot \mathrm{s7} \tag{115}$$

7.57 Reaction re58

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

Name DopMod5merProtBind

Reaction equation

$$\mathrm{s1} + \mathrm{s35} \xrightarrow{\mathrm{s1,\ s35}} \mathrm{s475} \tag{116}$$

Reactants

Table 180: Properties of each reactant.

Id	Name	SBO
s1	DopModWTasyn5	
s35	Proteasome	

Modifiers

Table 181: Properties of each modifier.

Id	Name	SBO
s1	DopModWTasyn5	
s35	Proteasome	

Product

Table 182: Properties of each product.

Id	Name	SBO
s475	ProtDopModWTasyn5	

Kinetic Law

Derived unit contains undeclared units

$$v_{57} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s1} \cdot \mathrm{s35} \tag{117}$$

7.58 Reaction re59

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

Name DopModAutophagosomeUptake6mer

Reaction equation

$$\mathrm{s21} \xrightarrow{\mathrm{s21}} \mathrm{s528} \tag{118}$$

Reactant

Table 183: Properties of each reactant.

Id	Name	SBO
s21	DopModWTasyn6	

Modifier

Table 184: Properties of each modifier.

Id	Name	SBO
s21	DopModWTasyn6	

Product

Table 185: Properties of each product.

Id	Name	SBO
s528	DopModWTasyn6	

Kinetic Law

Derived unit contains undeclared units

$$v_{58} = \text{k\_OligAutophagUptake} \cdot \text{s21} \tag{119}$$

7.59 Reaction re60

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

Name DopMod7merForm

Reaction equation

$$\text{s21} + \text{s7} \xrightarrow{\text{s21, s7}} \text{s25} \tag{120}$$

Reactants

Table 186: Properties of each reactant.

Id	Name	SBO
s21	DopModWTasyn6	
s7	DopModWTasyn	

Modifiers

Table 187: Properties of each modifier.

Id	Name	SBO
s21	DopModWTasyn6	
s7	DopModWTasyn	

Product

Table 188: Properties of each product.

Id	Name	SBO
s25	DopModWTasyn7	

Kinetic Law

Derived unit contains undeclared units

$$v_{59} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s21} \cdot \mathrm{s7} \tag{121}$$

7.60 Reaction re61

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

Name DopMod6merProtBind

Reaction equation

$$\mathrm{s21} + \mathrm{s35} \xrightarrow{\mathrm{s21,\ s35}} \mathrm{s476} \tag{122}$$

Reactants

Table 189: Properties of each reactant.

Id	Name	SBO
s21	DopModWTasyn6	
s35	Proteasome	

Modifiers

Table 190: Properties of each modifier.

Id	Name	SBO
s21	DopModWTasyn6	
s35	Proteasome	

Product

Table 191: Properties of each product.

Id	Name	SBO
s476	ProtDopModWTasyn6	

Kinetic Law

Derived unit contains undeclared units

$$v_{60} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s21} \cdot \mathrm{s35} \tag{123}$$

7.61 Reaction re62

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

Name DopModAutophagosomeUptake7mer

Reaction equation

$$\mathrm{s25} \xrightarrow{\mathrm{s25}} \mathrm{s526} \tag{124}$$

Reactant

Table 192: Properties of each reactant.

Id	Name	SBO
s25	DopModWTasyn7	

Modifier

Table 193: Properties of each modifier.

Id	Name	SBO
s25	DopModWTasyn7	

Product

Table 194: Properties of each product.

Id	Name	SBO
s526	DopModWTasyn7	

Kinetic Law

Derived unit contains undeclared units

$$v_{61} = \text{k\_OligAutophagUptake} \cdot \text{s25} \tag{125}$$

7.62 Reaction re63

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

Name DopMod8merForm

Reaction equation

$$\text{s25} + \text{s7} \xrightarrow{\text{s25, s7}} \text{s26} \tag{126}$$

Reactants

Table 195: Properties of each reactant.

Id	Name	SBO
s25	DopModWTasyn7	
s7	DopModWTasyn	

Modifiers

Table 196: Properties of each modifier.

Id	Name	SBO
s25	DopModWTasyn7	
s7	DopModWTasyn	

Product

Table 197: Properties of each product.

Id	Name	SBO
s26	DopModWTasyn8	

Kinetic Law

Derived unit contains undeclared units

$$v_{62} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s25} \cdot \mathrm{s7} \tag{127}$$

7.63 Reaction re64

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

Name DopMod7merProtBind

Reaction equation

$$\mathrm{s25} + \mathrm{s35} \xrightarrow{\mathrm{s25,\ s35}} \mathrm{s477} \tag{128}$$

Reactants

Table 198: Properties of each reactant.

Id	Name	SBO
s25	DopModWTasyn7	
s35	Proteasome	

Modifiers

Table 199: Properties of each modifier.

Id	Name	SBO
s25	DopModWTasyn7	
s35	Proteasome	

Product

Table 200: Properties of each product.

Id	Name	SBO
s477	ProtDopModWTasyn7	

Kinetic Law

Derived unit contains undeclared units

$$v_{63} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s25} \cdot \mathrm{s35} \tag{129}$$

7.64 Reaction re65

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

Name DopModAutophagosomeUptake8mer

Reaction equation

$$\mathrm{s26} \xrightarrow{\mathrm{s26}} \mathrm{s525} \tag{130}$$

Reactant

Table 201: Properties of each reactant.

Id	Name	SBO
s26	DopModWTasyn8	

Modifier

Table 202: Properties of each modifier.

Id	Name	SBO
s26	DopModWTasyn8	

Product

Table 203: Properties of each product.

Id	Name	SBO
s525	DopModWTasyn8	

Kinetic Law

Derived unit contains undeclared units

$$v_{64} = \text{k\_OligAutophagUptake} \cdot \text{s26} \tag{131}$$

7.65 Reaction re66

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

Name DopMod9merForm

Reaction equation

$$\text{s26} + \text{s7} \xrightarrow{\text{s26, s7}} \text{s27} \tag{132}$$

Reactants

Table 204: Properties of each reactant.

Id	Name	SBO
s26	DopModWTasyn8	
s7	DopModWTasyn	

Modifiers

Table 205: Properties of each modifier.

Id	Name	SBO
s26	DopModWTasyn8	
s7	DopModWTasyn	

Product

Table 206: Properties of each product.

Id	Name	SBO
s27	DopModWTasyn9	

Kinetic Law

Derived unit contains undeclared units

$$v_{65} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_OligomerForm} \cdot \mathrm{s26} \cdot \mathrm{s7} \tag{133}$$

7.66 Reaction re67

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

Name DopMod8merProtBind

Reaction equation

$$\mathrm{s26} + \mathrm{s35} \xrightarrow{\mathrm{s26,\ s35}} \mathrm{s478} \tag{134}$$

Reactants

Table 207: Properties of each reactant.

Id	Name	SBO
s26	DopModWTasyn8	
s35	Proteasome	

Modifiers

Table 208: Properties of each modifier.

Id	Name	SBO
s26	DopModWTasyn8	
s35	Proteasome	

Product

Table 209: Properties of each product.

Id	Name	SBO
s478	ProtDopModWTasyn8	

Kinetic Law

Derived unit contains undeclared units

$$v_{66} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s26} \cdot \mathrm{s35} \tag{135}$$

7.67 Reaction re68

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

Name DopMod9merProtBind

Reaction equation

$$\mathrm{s27} + \mathrm{s35} \xrightarrow{\mathrm{s27,\ s35}} \mathrm{s479} \tag{136}$$

Reactants

Table 210: Properties of each reactant.

Id	Name	SBO
s27	DopModWTasyn9	
s35	Proteasome	

Modifiers

Table 211: Properties of each modifier.

Id	Name	SBO
s27	DopModWTasyn9	
s35	Proteasome	

Product

Table 212: Properties of each product.

Id	Name	SBO
s479	ProtDopModWTasyn9	

Kinetic Law

Derived unit contains undeclared units

$$v_{67} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s27} \cdot \mathrm{s35} \tag{137}$$

7.68 Reaction re69

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

Name WTasyn2merCMADegr

Reaction equation

$$\mathrm{s53} \xrightarrow{\mathrm{s53}} \mathrm{s211} \tag{138}$$

Reactant

Table 213: Properties of each reactant.

Id	Name	SBO
s53	WTasyn2	

Modifier

Table 214: Properties of each modifier.

Id	Name	SBO
s53	WTasyn2	

Product

Table 215: Properties of each product.

Id	Name	SBO
s211	WTasyn2merCMADegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{68} = \mathrm{vol}\,(\mathrm{c3}) \cdot \mathrm{k1} \cdot \mathrm{s53} \tag{139}$$

Table 216: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		0.1		☑

7.69 Reaction re70

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

Name WTasyn1merCMADegr

Reaction equation

$$\mathrm{s52} \xrightarrow{\mathrm{s52}} \mathrm{s213} \tag{140}$$

Reactant

Table 217: Properties of each reactant.

Id	Name	SBO
s52	WTasyn	

Modifier

Table 218: Properties of each modifier.

Id	Name	SBO
s52	WTasyn	

Product

Table 219: Properties of each product.

Id	Name	SBO
s213	WTasynCMADegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{69} = \mathrm{vol}\,(\mathrm{c3}) \cdot \mathrm{k1} \cdot \mathrm{s52} \tag{141}$$

Table 220: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		0.1		☑

7.70 Reaction re71

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

Name LampFree9merWT

Reaction equation

$$\mathrm{s501} \xrightarrow{\mathrm{s501}} \mathrm{s29} + \mathrm{s51} \tag{142}$$

Reactant

Table 221: Properties of each reactant.

Id	Name	SBO
s501	WTasyn9merOnLamp	

Id	Name	SBO

Modifier

Table 222: Properties of each modifier.

Id	Name	SBO
s501	WTasyn9merOnLamp	

Products

Table 223: Properties of each product.

Id	Name	SBO
s29	WTasyn9	
s51	Lamp2a	

Kinetic Law

Derived unit contains undeclared units

$$v_{70} = \text{k\_LampFreeWTasyn} \cdot \text{s501} \tag{143}$$

7.71 Reaction re72

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

Name DopWTasyn3merFormOnLamp

Reaction equation

$$\text{s482} + \text{s7} \xrightarrow{\text{s482, s7}} \text{s483} \tag{144}$$

Reactants

Table 224: Properties of each reactant.

Id	Name	SBO
s482	DopModWTasyn2merOnLamp	
s7	DopModWTasyn	

Modifiers

Table 225: Properties of each modifier.

Id	Name	SBO
s482	DopModWTasyn2merOnLamp	
s7	DopModWTasyn	

Product

Table 226: Properties of each product.

Id	Name	SBO
s483	DopModWTasyn3merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{71} = \text{k\_OligomerForm} \cdot \text{s482} \cdot \text{s7} \tag{145}$$

7.72 Reaction re73

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

Name DopWTasyn4merFormOnLamp

Reaction equation

$$\text{s483} + \text{s7} \xrightarrow{\text{s483, s7}} \text{s484} \tag{146}$$

Reactants

Table 227: Properties of each reactant.

Id	Name	SBO
s483	DopModWTasyn3merOnLamp	
s7	DopModWTasyn	

Modifiers

Table 228: Properties of each modifier.

Id	Name	SBO
s483	DopModWTasyn3merOnLamp	
s7	DopModWTasyn	

Product

Table 229: Properties of each product.

Id	Name	SBO
s484	DopModWTasyn4merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{72} = \text{k\_OligomerForm} \cdot \text{s483} \cdot \text{s7} \tag{147}$$

7.73 Reaction re74

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

Name DopWTasyn5merFormOnLamp

Reaction equation

$$\text{s484} + \text{s7} \xrightarrow{\text{s484, s7}} \text{s491} \tag{148}$$

Reactants

Table 230: Properties of each reactant.

Id	Name	SBO
s484	DopModWTasyn4merOnLamp	
s7	DopModWTasyn	

Modifiers

Table 231: Properties of each modifier.

Id	Name	SBO
s484	DopModWTasyn4merOnLamp	
s7	DopModWTasyn	

Product

Table 232: Properties of each product.

Id	Name	SBO
s491	DopModWTasyn5merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{73} = \text{k\_OligomerForm} \cdot \text{s484} \cdot \text{s7} \tag{149}$$

7.74 Reaction re75

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

Name DopWTasyn6merFormOnLamp

Reaction equation

$$\text{s491} + \text{s7} \xrightarrow{\text{s491, s7}} \text{s490} \tag{150}$$

Reactants

Table 233: Properties of each reactant.

Id	Name	SBO
s491	DopModWTasyn5merOnLamp	
s7	DopModWTasyn	

Modifiers

Table 234: Properties of each modifier.

Id	Name	SBO
s491	DopModWTasyn5merOnLamp	
s7	DopModWTasyn	

Product

Table 235: Properties of each product.

Id	Name	SBO
s490	DopModWTasyn6merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{74} = \text{k\_OligomerForm} \cdot \text{s491} \cdot \text{s7} \tag{151}$$

7.75 Reaction re76

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

Name LampFree3merWT

Reaction equation

$$\text{s494} \xrightarrow{\text{s494}} \text{s20} + \text{s51} \tag{152}$$

Reactant

Table 236: Properties of each reactant.

Id	Name	SBO
s494	WTasyn3merOnLamp	

Modifier

Table 237: Properties of each modifier.

Id	Name	SBO
s494	WTasyn3merOnLamp	

Id	Name	SBO

Products

Table 238: Properties of each product.

Id	Name	SBO
s20	WTasyn3	
s51	Lamp2a	

Kinetic Law

Derived unit contains undeclared units

$$v_{75} = \text{k\_LampFreeWTasyn} \cdot \text{s494} \tag{153}$$

7.76 Reaction re77

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

Name LampFree4merWT

Reaction equation

$$\text{s495} \xrightarrow{\text{s495}} \text{s24} + \text{s51} \tag{154}$$

Reactant

Table 239: Properties of each reactant.

Id	Name	SBO
s495	WTasyn4merOnLamp	

Modifier

Table 240: Properties of each modifier.

Id	Name	SBO
s495	WTasyn4merOnLamp	

Products

Table 241: Properties of each product.

Id	Name	SBO
s24	WTasyn4	
s51	Lamp2a	

Kinetic Law

Derived unit contains undeclared units

$$v_{76} = \text{k\_LampFreeWTasyn} \cdot \text{s495} \tag{155}$$

7.77 Reaction re78

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

Name LampFree5merWT

Reaction equation

$$\text{s496} \xrightarrow{\text{s496}} \text{s23} + \text{s51} \tag{156}$$

Reactant

Table 242: Properties of each reactant.

Id	Name	SBO
s496	WTasyn5merOnLamp	

Modifier

Table 243: Properties of each modifier.

Id	Name	SBO
s496	WTasyn5merOnLamp	

Products

Table 244: Properties of each product.

Id	Name	SBO
s23	WTasyn5	
s51	Lamp2a	

Kinetic Law

Derived unit contains undeclared units

$$v_{77} = \text{k\_LampFreeWTasyn} \cdot \text{s496} \tag{157}$$

7.78 Reaction re79

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

Name LampFree6merWT

Reaction equation

$$\text{s498} \xrightarrow{\text{s498}} \text{s32} + \text{s51} \tag{158}$$

Reactant

Table 245: Properties of each reactant.

Id	Name	SBO
s498	WTasyn6merOnLamp	

Modifier

Table 246: Properties of each modifier.

Id	Name	SBO
s498	WTasyn6merOnLamp	

Products

Table 247: Properties of each product.

Id	Name	SBO
s32	WTasyn6	

Id	Name	SBO
s51	Lamp2a	

Kinetic Law

Derived unit contains undeclared units

$$v_{78} = \text{k\_LampFreeWTasyn} \cdot \text{s498} \tag{159}$$

7.79 Reaction re80

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

Name LampFree7merWT

Reaction equation

$$\text{s499} \xrightarrow{\text{s499}} \text{s31} + \text{s51} \tag{160}$$

Reactant

Table 248: Properties of each reactant.

Id	Name	SBO
s499	WTasyn7merOnLamp	

Modifier

Table 249: Properties of each modifier.

Id	Name	SBO
s499	WTasyn7merOnLamp	

Products

Table 250: Properties of each product.

Id	Name	SBO
s31	WTasyn7	
s51	Lamp2a	

Kinetic Law

Derived unit contains undeclared units

$$v_{79} = \text{k\_LampFreeWTasyn} \cdot \text{s499} \tag{161}$$

7.80 Reaction re81

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

Name LampFree8merWT

Reaction equation

$$\text{s500} \xrightarrow{\text{s500}} \text{s30} + \text{s51} \tag{162}$$

Reactant

Table 251: Properties of each reactant.

Id	Name	SBO
s500	WTasyn8merOnLamp	

Modifier

Table 252: Properties of each modifier.

Id	Name	SBO
s500	WTasyn8merOnLamp	

Products

Table 253: Properties of each product.

Id	Name	SBO
s30	WTasyn8	
s51	Lamp2a	

Kinetic Law

Derived unit contains undeclared units

$$v_{80} = \text{k\_LampFreeWTasyn} \cdot \text{s500} \tag{163}$$

7.81 Reaction re82

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

Name WTasyn8merBindOnLamp

Reaction equation

$$\text{s500} + \text{s30} \xrightarrow{\text{s500, s30}} \text{s51} \tag{164}$$

Reactants

Table 254: Properties of each reactant.

Id	Name	SBO
s500	WTasyn8merOnLamp	
s30	WTasyn8	

Modifiers

Table 255: Properties of each modifier.

Id	Name	SBO
s500	WTasyn8merOnLamp	
s30	WTasyn8	

Product

Table 256: Properties of each product.

Id	Name	SBO
s51	Lamp2a	

Kinetic Law

Derived unit contains undeclared units

$$v_{81} = \text{k\_WTOligBindOnLamp} \cdot \text{s500} \cdot \text{s30} \tag{165}$$

7.82 Reaction re83

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

Name WTasyn3merBindOnLamp

Reaction equation

$$\mathrm{s51} + \mathrm{s20} \xrightarrow{\mathrm{s51,\ s20}} \mathrm{s494} \tag{166}$$

Reactants

Table 257: Properties of each reactant.

Id	Name	SBO
s51	Lamp2a	
s20	WTasyn3	

Modifiers

Table 258: Properties of each modifier.

Id	Name	SBO
s51	Lamp2a	
s20	WTasyn3	

Product

Table 259: Properties of each product.

Id	Name	SBO
s494	WTasyn3merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{82} = \mathrm{k\_WTOligBindOnLamp} \cdot \mathrm{s51} \cdot \mathrm{s20} \tag{167}$$

7.83 Reaction re84

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

Name WTasyn4merBindOnLamp

Reaction equation

$$\mathrm{s51} + \mathrm{s24} \xrightarrow{\mathrm{s51,\ s24}} \mathrm{s495} \tag{168}$$

Reactants

Table 260: Properties of each reactant.

Id	Name	SBO
s51	Lamp2a	
s24	WTasyn4	

Modifiers

Table 261: Properties of each modifier.

Id	Name	SBO
s51	Lamp2a	
s24	WTasyn4	

Product

Table 262: Properties of each product.

Id	Name	SBO
s495	WTasyn4merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{83} = \mathrm{k\_WTOligBindOnLamp} \cdot \mathrm{s51} \cdot \mathrm{s24} \tag{169}$$

7.84 Reaction re85

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

Name WTasyn6merBindOnLamp

Reaction equation

$$\mathrm{s51} + \mathrm{s32} \xrightarrow{\mathrm{s51,\ s32}} \mathrm{s498} \tag{170}$$

Reactants

Table 263: Properties of each reactant.

Id	Name	SBO
s51	Lamp2a	
s32	WTasyn6	

Modifiers

Table 264: Properties of each modifier.

Id	Name	SBO
s51	Lamp2a	
s32	WTasyn6	

Product

Table 265: Properties of each product.

Id	Name	SBO
s498	WTasyn6merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{84} = \text{k\_WTOligBindOnLamp} \cdot \text{s51} \cdot \text{s32} \tag{171}$$

7.85 Reaction re86

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

Name DopModWTasynCMAInhibition

Reaction equation

$$\text{s51} + \text{s7} \xrightarrow{\text{s51, s7}} \text{s536} \tag{172}$$

Reactants

Table 266: Properties of each reactant.

Id	Name	SBO
s51	Lamp2a	
s7	DopModWTasyn	

Modifiers

Table 267: Properties of each modifier.

Id	Name	SBO
s51	Lamp2a	
s7	DopModWTasyn	

Product

Table 268: Properties of each product.

Id	Name	SBO
s536	DopModWTasynOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{85} = \text{k\_DopModWTasynLampBind} \cdot \text{s51} \cdot \text{s7} \tag{173}$$

7.86 Reaction re87

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

Name M/autophagyDopModWTasyn4Degr

Reaction equation

$$\text{s530} \xrightarrow{\text{s530}} \text{s447} \tag{174}$$

Reactant

Table 269: Properties of each reactant.

Id	Name	SBO
s530	DopModWTasyn4	

Modifier

Table 270: Properties of each modifier.

Id	Name	SBO
s530	DopModWTasyn4	

Product

Table 271: Properties of each product.

Id	Name	SBO
s447	DopModWTasyn4merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{86} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s530} \tag{175}$$

7.87 Reaction re88

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

Name M/autophagyDopModWTasyn3Degr

Reaction equation

$$\mathrm{s531} \xrightarrow{\mathrm{s531}} \mathrm{s446} \tag{176}$$

Reactant

Table 272: Properties of each reactant.

Id	Name	SBO
s531	DopModWTasyn3	

Modifier

Table 273: Properties of each modifier.

Id	Name	SBO
s531	DopModWTasyn3	

Product

Table 274: Properties of each product.

Id	Name	SBO
s446	DopModWTasyn3merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{87} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s531} \tag{177}$$

7.88 Reaction re89

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

Name M/autophagyDopModWTasyn2Degr

Reaction equation

$$\mathrm{s527} \xrightarrow{\mathrm{s527}} \mathrm{s445} \tag{178}$$

Reactant

Table 275: Properties of each reactant.

Id	Name	SBO
s527	DopModWTasyn2	

Modifier

Table 276: Properties of each modifier.

Id	Name	SBO
s527	DopModWTasyn2	

Product

Table 277: Properties of each product.

Id	Name	SBO
s445	DopModWTasyn2merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{88} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s527} \tag{179}$$

7.89 Reaction re90

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

Name M/autophagyDopModWTasyn5Degr

Reaction equation

$$\mathrm{s529} \xrightarrow{\mathrm{s529}} \mathrm{s448} \tag{180}$$

Reactant

Table 278: Properties of each reactant.

Id	Name	SBO
s529	DopModWTasyn5	

Modifier

Table 279: Properties of each modifier.

Id	Name	SBO
s529	DopModWTasyn5	

Product

Table 280: Properties of each product.

Id	Name	SBO
s448	DopModWTasyn6merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{89} = \mathrm{vol}(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s529} \tag{181}$$

7.90 Reaction re91

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

Name M/autophagyDopModWTasyn6Degr

Reaction equation

$$\mathrm{s528} \xrightarrow{\mathrm{s528}} \mathrm{s524} \tag{182}$$

Reactant

Table 281: Properties of each reactant.

Id	Name	SBO
s528	DopModWTasyn6	

Modifier

Table 282: Properties of each modifier.

Id	Name	SBO
s528	DopModWTasyn6	

Product

Table 283: Properties of each product.

Id	Name	SBO
s524	DopModWTasyn7merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{90} = \mathrm{vol}(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s528} \tag{183}$$

7.91 Reaction re92

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

Name M/autophagyDopModWTasyn7Degr

Reaction equation

$$\mathrm{s526} \xrightarrow{\mathrm{s526}} \mathrm{s524} \tag{184}$$

Reactant

Table 284: Properties of each reactant.

Id	Name	SBO
s526	DopModWTasyn7	

Modifier

Table 285: Properties of each modifier.

Id	Name	SBO
s526	DopModWTasyn7	

Product

Table 286: Properties of each product.

Id	Name	SBO
s524	DopModWTasyn7merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{91} = \mathrm{vol}(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s526} \tag{185}$$

7.92 Reaction re93

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

Name M/autophagyDopModWTasyn8Degr

Reaction equation

$$\mathrm{s525} \xrightarrow{\mathrm{s525}} \mathrm{s451} \tag{186}$$

Reactant

Table 287: Properties of each reactant.

Id	Name	SBO
s525	DopModWTasyn8	

Modifier

Table 288: Properties of each modifier.

Id	Name	SBO
s525	DopModWTasyn8	

Product

Table 289: Properties of each product.

Id	Name	SBO
s451	DopModWTasyn8merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{92} = \mathrm{vol}(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s525} \tag{187}$$

7.93 Reaction re94

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

Name WTasyn2merFormOnLamp

Reaction equation

$$\mathrm{s17} + \mathrm{s78} \xrightarrow{\mathrm{s17,\ s78}} \mathrm{s85} \tag{188}$$

Reactants

Table 290: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	
s78	WTasyndegr	

Modifiers

Table 291: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	
s78	WTasyndegr	

Product

Table 292: Properties of each product.

Id	Name	SBO
s85	WTasyn2degr	

Kinetic Law

Derived unit contains undeclared units

$$v_{93} = \mathrm{k\_2merForm} \cdot \mathrm{s17} \cdot \mathrm{s78} \tag{189}$$

7.94 Reaction re95

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

Name WTasyn3merFormOnLamp

Reaction equation

$$\mathrm{s17} + \mathrm{s85} \xrightarrow{\mathrm{s17,\ s85}} \mathrm{s494} \tag{190}$$

Reactants

Table 293: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	
s85	WTasyn2degr	

Modifiers

Table 294: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	
s85	WTasyn2degr	

Product

Table 295: Properties of each product.

Id	Name	SBO
s494	WTasyn3merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{94} = \mathrm{k\_OligomerForm} \cdot \mathrm{s17} \cdot \mathrm{s85} \tag{191}$$

7.95 Reaction re96

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

Name WTasyn4merFormOnLamp

Reaction equation

$$\mathrm{s17} + \mathrm{s494} \xrightarrow{\mathrm{s17,\ s494}} \mathrm{s495} \tag{192}$$

Reactants

Table 296: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	
s494	WTasyn3merOnLamp	

Modifiers

Table 297: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	
s494	WTasyn3merOnLamp	

Product

Table 298: Properties of each product.

Id	Name	SBO
s495	WTasyn4merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{95} = \mathrm{k\_OligomerForm} \cdot \mathrm{s17} \cdot \mathrm{s494} \tag{193}$$

7.96 Reaction re97

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

Name WTasyn5merFormOnLamp

Reaction equation

$$\mathrm{s17} + \mathrm{s495} \xrightarrow{\mathrm{s17,\ s495}} \mathrm{s496} \tag{194}$$

Reactants

Table 299: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	
s495	WTasyn4merOnLamp	

Modifiers

Table 300: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	
s495	WTasyn4merOnLamp	

Product

Table 301: Properties of each product.

Id	Name	SBO
s496	WTasyn5merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{96} = \text{k\_OligomerForm} \cdot \text{s17} \cdot \text{s495} \tag{195}$$

7.97 Reaction re98

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

Name WTasyn6merFormOnLamp

Reaction equation

$$\text{s496} + \text{s17} \xrightarrow{\text{s496, s17}} \text{s498} \tag{196}$$

Reactants

Table 302: Properties of each reactant.

Id	Name	SBO
s496	WTasyn5merOnLamp	
s17	WTasyn	

Modifiers

Table 303: Properties of each modifier.

Id	Name	SBO
s496	WTasyn5merOnLamp	
s17	WTasyn	

Product

Table 304: Properties of each product.

Id	Name	SBO
s498	WTasyn6merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{97} = \text{k\_OligomerForm} \cdot \text{s496} \cdot \text{s17} \tag{197}$$

7.98 Reaction re99

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

Name WTasyn7merFormOnLamp

Reaction equation

$$\text{s498} + \text{s17} \xrightarrow{\text{s498, s17}} \text{s499} \tag{198}$$

Reactants

Table 305: Properties of each reactant.

Id	Name	SBO
s498	WTasyn6merOnLamp	
s17	WTasyn	

Modifiers

Table 306: Properties of each modifier.

Id	Name	SBO
s498	WTasyn6merOnLamp	
s17	WTasyn	

Product

Table 307: Properties of each product.

Id	Name	SBO
s499	WTasyn7merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{98} = \text{k\_OligomerForm} \cdot \text{s498} \cdot \text{s17} \tag{199}$$

7.99 Reaction re100

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

Name WTasyn8merFormOnLamp

Reaction equation

$$\text{s17} + \text{s499} \xrightarrow{\text{s17, s499}} \text{s500} \tag{200}$$

Reactants

Table 308: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	
s499	WTasyn7merOnLamp	

Modifiers

Table 309: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	
s499	WTasyn7merOnLamp	

Product

Table 310: Properties of each product.

Id	Name	SBO
s500	WTasyn8merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{99} = \text{k\_OligomerForm} \cdot \text{s17} \cdot \text{s499} \tag{201}$$

7.100 Reaction re101

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

Name WTasyn9merFormOnLamp

Reaction equation

$$\text{s17} + \text{s500} \xrightarrow{\text{s17, s500}} \text{s501} \tag{202}$$

Reactants

Table 311: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	
s500	WTasyn8merOnLamp	

Modifiers

Table 312: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	
s500	WTasyn8merOnLamp	

Product

Table 313: Properties of each product.

Id	Name	SBO
s501	WTasyn9merOnLamp	

Kinetic Law

Derived unit contains undeclared units

$$v_{100} = \text{k\_OligomerForm} \cdot \text{s17} \cdot \text{s500} \tag{203}$$

7.101 Reaction re102

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

Name ProtFree3merWT

Reaction equation

$$\text{s381} \xrightarrow{\text{s381}} \text{s35} \tag{204}$$

Reactant

Table 314: Properties of each reactant.

Id	Name	SBO
s381	ProtWTasyn3	

Modifier

Table 315: Properties of each modifier.

Id	Name	SBO
s381	ProtWTasyn3	

Product

Table 316: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{101} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s381} \tag{205}$$

7.102 Reaction re103

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

Name ProtFree4merWT

Reaction equation

$$\mathrm{s383} \xrightarrow{\mathrm{s383}} \mathrm{s35} \tag{206}$$

Reactant

Table 317: Properties of each reactant.

Id	Name	SBO
s383	ProtWTasyn4	

Modifier

Table 318: Properties of each modifier.

Id	Name	SBO
s383	ProtWTasyn4	

Product

Table 319: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{102} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s383} \tag{207}$$

7.103 Reaction re104

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

Name ProtFree5merWT

Reaction equation

$$\mathrm{s385} \xrightarrow{\mathrm{s385}} \mathrm{s35} \tag{208}$$

Reactant

Table 320: Properties of each reactant.

Id	Name	SBO
s385	ProtWTasyn5	

Modifier

Table 321: Properties of each modifier.

Id	Name	SBO
s385	ProtWTasyn5	

Product

Table 322: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{103} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s385} \tag{209}$$

7.104 Reaction re105

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

Name ProtFree6merWT

Reaction equation

$$\mathrm{s387} \xrightarrow{\mathrm{s387}} \mathrm{s35} \tag{210}$$

Reactant

Table 323: Properties of each reactant.

Id	Name	SBO
s387	ProtWTasyn6	

Modifier

Table 324: Properties of each modifier.

Id	Name	SBO
s387	ProtWTasyn6	

Product

Table 325: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{104} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s387} \tag{211}$$

7.105 Reaction re106

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

Name ProtFree7merWT

Reaction equation

$$\mathrm{s389} \xrightarrow{\mathrm{s389}} \mathrm{s35} \tag{212}$$

Reactant

Table 326: Properties of each reactant.

Id	Name	SBO
s389	ProtWTasyn7	

Modifier

Table 327: Properties of each modifier.

Id	Name	SBO
s389	ProtWTasyn7	

Product

Table 328: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{105} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s389} \tag{213}$$

7.106 Reaction re107

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

Name ProtFree8merWT

Reaction equation

$$\mathrm{s391} \xrightarrow{\mathrm{s391}} \mathrm{s35} \tag{214}$$

Reactant

Table 329: Properties of each reactant.

Id	Name	SBO
s391	ProtWTasyn8	

Modifier

Table 330: Properties of each modifier.

Id	Name	SBO
s391	ProtWTasyn8	

Product

Table 331: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{106} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s391} \tag{215}$$

7.107 Reaction re108

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

Name ProtFree9merWT

Reaction equation

$$\mathrm{s393} \xrightarrow{\mathrm{s393}} \mathrm{s35} \tag{216}$$

Reactant

Table 332: Properties of each reactant.

Id	Name	SBO
s393	ProtWTasyn9	

Modifier

Table 333: Properties of each modifier.

Id	Name	SBO
s393	ProtWTasyn9	

Product

Table 334: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{107} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s393} \tag{217}$$

7.108 Reaction re109

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

Name ProtFree3merDopWT

Reaction equation

$$\text{s473} \xrightarrow{\text{s473}} \text{s35} \tag{218}$$

Reactant

Table 335: Properties of each reactant.

Id	Name	SBO
s473	ProtDopModWTasyn3	

Modifier

Table 336: Properties of each modifier.

Id	Name	SBO
s473	ProtDopModWTasyn3	

Product

Table 337: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{108} = \text{vol}\,(\text{c1}) \cdot \text{k\_ProtOligDegr} \cdot \text{s473} \tag{219}$$

7.109 Reaction re110

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

Name ProtFree4merDopWT

Reaction equation

$$\text{s474} \xrightarrow{\text{s474}} \text{s35} \tag{220}$$

Reactant

Table 338: Properties of each reactant.

Id	Name	SBO
s474	ProtDopModWTasyn4	

Modifier

Table 339: Properties of each modifier.

Id	Name	SBO
s474	ProtDopModWTasyn4	

Product

Table 340: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{109} = \text{vol}\,(\text{c1}) \cdot \text{k\_ProtOligDegr} \cdot \text{s474} \tag{221}$$

7.110 Reaction re111

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

Name ProtFree5merDopWT

Reaction equation

$$\text{s475} \xrightarrow{\text{s475}} \text{s35} \tag{222}$$

Reactant

Table 341: Properties of each reactant.

Id	Name	SBO
s475	ProtDopModWTasyn5	

Modifier

Table 342: Properties of each modifier.

Id	Name	SBO
s475	ProtDopModWTasyn5	

Product

Table 343: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{110} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s475} \tag{223}$$

7.111 Reaction re112

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

Name ProtFree6merDopWT

Reaction equation

$$\mathrm{s476} \xrightarrow{\mathrm{s476}} \mathrm{s35} \tag{224}$$

Reactant

Table 344: Properties of each reactant.

Id	Name	SBO
s476	ProtDopModWTasyn6	

Modifier

Table 345: Properties of each modifier.

Id	Name	SBO
s476	ProtDopModWTasyn6	

Product

Table 346: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{111} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s476} \tag{225}$$

7.112 Reaction re113

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

Name ProtFree7merDopWT

Reaction equation

$$\mathrm{s477} \xrightarrow{\mathrm{s477}} \mathrm{s35} \tag{226}$$

Reactant

Table 347: Properties of each reactant.

Id	Name	SBO
s477	ProtDopModWTasyn7	

Modifier

Table 348: Properties of each modifier.

Id	Name	SBO
s477	ProtDopModWTasyn7	

Product

Table 349: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{112} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s477} \tag{227}$$

7.113 Reaction re114

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

Name ProtFree8merDopWT

Reaction equation

$$\mathrm{s478} \xrightarrow{\mathrm{s478}} \mathrm{s35} \tag{228}$$

Reactant

Table 350: Properties of each reactant.

Id	Name	SBO
s478	ProtDopModWTasyn8	

Modifier

Table 351: Properties of each modifier.

Id	Name	SBO
s478	ProtDopModWTasyn8	

Product

Table 352: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{113} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s478} \tag{229}$$

7.114 Reaction re115

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

Name ProtFree9merDopWT

Reaction equation

$$\mathrm{s479} \xrightarrow{\mathrm{s479}} \mathrm{s35} \tag{230}$$

Reactant

Table 353: Properties of each reactant.

Id	Name	SBO
s479	ProtDopModWTasyn9	

Modifier

Table 354: Properties of each modifier.

Id	Name	SBO
s479	ProtDopModWTasyn9	

Product

Table 355: Properties of each product.

Id	Name	SBO
s35	Proteasome	

Kinetic Law

Derived unit contains undeclared units

$$v_{114} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProtOligDegr} \cdot \mathrm{s479} \tag{231}$$

7.115 Reaction re116

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

Name WTasynHigherPSCprotInh

Reaction equation

$$\mathrm{s33} + \mathrm{s35} \xrightarrow{\mathrm{s33,\ s35}} \mathrm{s502} \tag{232}$$

Reactants

Table 356: Properties of each reactant.

Id	Name	SBO
s33	HigherWTasynSPC	
s35	Proteasome	

Modifiers

Table 357: Properties of each modifier.

Id	Name	SBO
s33	HigherWTasynSPC	
s35	Proteasome	

Product

Table 358: Properties of each product.

Id	Name	SBO
s502	ProtWTasynHigherSPC	

Kinetic Law

Derived unit contains undeclared units

$$v_{115} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_ProteasomeBind} \cdot \mathrm{s33} \cdot \mathrm{s35} \tag{233}$$

7.116 Reaction re117

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

Name DopMod9merDis

Reaction equation

$$\mathrm{s27} \xrightarrow{\mathrm{s27}} \mathrm{s26} + \mathrm{s7} \tag{234}$$

Reactant

Table 359: Properties of each reactant.

Id	Name	SBO
s27	DopModWTasyn9	

Modifier

Table 360: Properties of each modifier.

Id	Name	SBO
s27	DopModWTasyn9	

Products

Table 361: Properties of each product.

Id	Name	SBO
s26	DopModWTasyn8	

Id	Name	SBO
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{116} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s27} \tag{235}$$

7.117 Reaction re118

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

Name DopMod8merDis

Reaction equation

$$\mathrm{s26} \xrightarrow{\mathrm{s26}} \mathrm{s25} + \mathrm{s7} \tag{236}$$

Reactant

Table 362: Properties of each reactant.

Id	Name	SBO
s26	DopModWTasyn8	

Modifier

Table 363: Properties of each modifier.

Id	Name	SBO
s26	DopModWTasyn8	

Products

Table 364: Properties of each product.

Id	Name	SBO
s25	DopModWTasyn7	
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{117} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s26} \tag{237}$$

7.118 Reaction re119

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

Name DopMod7merDis

Reaction equation

$$\mathrm{s25} \xrightarrow{\mathrm{s25}} \mathrm{s21} + \mathrm{s7} \tag{238}$$

Reactant

Table 365: Properties of each reactant.

Id	Name	SBO
s25	DopModWTasyn7	

Modifier

Table 366: Properties of each modifier.

Id	Name	SBO
s25	DopModWTasyn7	

Products

Table 367: Properties of each product.

Id	Name	SBO
s21	DopModWTasyn6	
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{118} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s25} \tag{239}$$

7.119 Reaction re120

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

Name DopMod6merDis

Reaction equation

$$\mathrm{s21} \xrightarrow{\mathrm{s21}} \mathrm{s1} + \mathrm{s7} \tag{240}$$

Reactant

Table 368: Properties of each reactant.

Id	Name	SBO
s21	DopModWTasyn6	

Modifier

Table 369: Properties of each modifier.

Id	Name	SBO
s21	DopModWTasyn6	

Products

Table 370: Properties of each product.

Id	Name	SBO
s1	DopModWTasyn5	
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{119} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s21} \tag{241}$$

7.120 Reaction re121

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

Name DopMod4merDis

Reaction equation

$$\mathrm{s2} \xrightarrow{\mathrm{s2}} \mathrm{s5} + \mathrm{s7} \tag{242}$$

Reactant

Table 371: Properties of each reactant.

Id	Name	SBO
s2	DopModWTasyn4	

Modifier

Table 372: Properties of each modifier.

Id	Name	SBO
s2	DopModWTasyn4	

Products

Table 373: Properties of each product.

Id	Name	SBO
s5	DopModWTasyn3	
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{120} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s2} \tag{243}$$

7.121 Reaction re122

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

Name DopMod5merDis

Reaction equation

$$\mathrm{s1} \xrightarrow{\mathrm{s1}} \mathrm{s2} + \mathrm{s7} \tag{244}$$

Reactant

Table 374: Properties of each reactant.

Id	Name	SBO
s1	DopModWTasyn5	

Modifier

Table 375: Properties of each modifier.

Id	Name	SBO
s1	DopModWTasyn5	

Products

Table 376: Properties of each product.

Id	Name	SBO
s2	DopModWTasyn4	
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{121} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s1} \tag{245}$$

7.122 Reaction re123

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

Name DopMod3merDis

Reaction equation

$$\mathrm{s5} \xrightarrow{\mathrm{s5}} \mathrm{s6} + \mathrm{s7} \tag{246}$$

Reactant

Table 377: Properties of each reactant.

Id	Name	SBO
s5	DopModWTasyn3	

Modifier

Table 378: Properties of each modifier.

Id	Name	SBO
s5	DopModWTasyn3	

Products

Table 379: Properties of each product.

Id	Name	SBO
s6	DopModWTasyn2	
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{122} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s5} \tag{247}$$

7.123 Reaction re124

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

Name DopMod2merDis

Reaction equation

$$\mathrm{s6} \xrightarrow{\mathrm{s6}} 2\,\mathrm{s7} \tag{248}$$

Reactant

Table 380: Properties of each reactant.

Id	Name	SBO
s6	DopModWTasyn2	

Modifier

Table 381: Properties of each modifier.

Id	Name	SBO
s6	DopModWTasyn2	

Product

Table 382: Properties of each product.

Id	Name	SBO
s7	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{123} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s6} \tag{249}$$

7.124 Reaction re125

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

Name 9merDis

Reaction equation

$$\mathrm{s29} \xrightarrow{\mathrm{s29}} \mathrm{s17} + \mathrm{s30} \tag{250}$$

Reactant

Table 383: Properties of each reactant.

Id	Name	SBO
s29	WTasyn9	

Modifier

Table 384: Properties of each modifier.

Id	Name	SBO
s29	WTasyn9	

Products

Table 385: Properties of each product.

Id	Name	SBO
s17	WTasyn	
s30	WTasyn8	

Kinetic Law

Derived unit contains undeclared units

$$v_{124} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s29} \tag{251}$$

7.125 Reaction re126

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

Name 8merDis

Reaction equation

$$\mathrm{s30} \xrightarrow{\mathrm{s30}} \mathrm{s31} + \mathrm{s17} \tag{252}$$

Reactant

Table 386: Properties of each reactant.

Id	Name	SBO
s30	WTasyn8	

Modifier

Table 387: Properties of each modifier.

Id	Name	SBO
s30	WTasyn8	

Products

Table 388: Properties of each product.

Id	Name	SBO
s31	WTasyn7	
s17	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{125} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s30} \tag{253}$$

7.126 Reaction re127

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

Name 7merDis

Reaction equation

$$\mathrm{s31} \xrightarrow{\mathrm{s31}} \mathrm{s32} + \mathrm{s17} \tag{254}$$

Reactant

Table 389: Properties of each reactant.

Id	Name	SBO
s31	WTasyn7	

Modifier

Table 390: Properties of each modifier.

Id	Name	SBO
s31	WTasyn7	

Products

Table 391: Properties of each product.

Id	Name	SBO
s32	WTasyn6	
s17	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{126} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s31} \tag{255}$$

7.127 Reaction re128

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

Name 6merDis

Reaction equation

$$\mathrm{s32} \xrightarrow{\mathrm{s32}} \mathrm{s17} + \mathrm{s23} \tag{256}$$

Reactant

Table 392: Properties of each reactant.

Id	Name	SBO
s32	WTasyn6	

Modifier

Table 393: Properties of each modifier.

Id	Name	SBO
s32	WTasyn6	

Products

Table 394: Properties of each product.

Id	Name	SBO
s17	WTasyn	
s23	WTasyn5	

Kinetic Law

Derived unit contains undeclared units

$$v_{127} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s32} \tag{257}$$

7.128 Reaction re129

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

Name 5merDis

Reaction equation

$$\mathrm{s23} \xrightarrow{\mathrm{s23}} \mathrm{s24} + \mathrm{s17} \tag{258}$$

Reactant

Table 395: Properties of each reactant.

Id	Name	SBO
s23	WTasyn5	

Modifier

Table 396: Properties of each modifier.

Id	Name	SBO
s23	WTasyn5	

Products

Table 397: Properties of each product.

Id	Name	SBO
s24	WTasyn4	
s17	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{128} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s23} \tag{259}$$

7.129 Reaction re130

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

Name 4merDis

Reaction equation

$$\mathrm{s24} \xrightarrow{\mathrm{s24}} \mathrm{s20} + \mathrm{s17} \tag{260}$$

Reactant

Table 398: Properties of each reactant.

Id	Name	SBO
s24	WTasyn4	

Modifier

Table 399: Properties of each modifier.

Id	Name	SBO
s24	WTasyn4	

Products

Table 400: Properties of each product.

Id	Name	SBO
s20	WTasyn3	
s17	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{129} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s24} \tag{261}$$

7.130 Reaction re131

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

Name 3merDis

Reaction equation

$$\mathrm{s20} \xrightarrow{\mathrm{s20}} \mathrm{s18} + \mathrm{s17} \tag{262}$$

Reactant

Table 401: Properties of each reactant.

Id	Name	SBO
s20	WTasyn3	

Modifier

Table 402: Properties of each modifier.

Id	Name	SBO
s20	WTasyn3	

Products

Table 403: Properties of each product.

Id	Name	SBO
s18	WTasyn2	
s17	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{130} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s20} \tag{263}$$

7.131 Reaction re132

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

Name 2merDis

Reaction equation

$$\mathrm{s18} \xrightarrow{\mathrm{s18}} 2\,\mathrm{s17} \tag{264}$$

Reactant

Table 404: Properties of each reactant.

Id	Name	SBO
s18	WTasyn2	

Modifier

Table 405: Properties of each modifier.

Id	Name	SBO
s18	WTasyn2	

Product

Table 406: Properties of each product.

Id	Name	SBO
s17	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{131} = \mathrm{vol}(\mathrm{c1}) \cdot \mathrm{k\_DisRate} \cdot \mathrm{s18} \tag{265}$$

7.132 Reaction re133

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

Name AggregGrowth

Reaction equation

$$\mathrm{s33} + \mathrm{s17} \xrightarrow{\mathrm{s33,\ s17}} \mathrm{s33} \tag{266}$$

Reactants

Table 407: Properties of each reactant.

Id	Name	SBO
s33	HigherWTasynSPC	
s17	WTasyn	

Modifiers

Table 408: Properties of each modifier.

Id	Name	SBO
s33	HigherWTasynSPC	
s17	WTasyn	

Product

Table 409: Properties of each product.

Id	Name	SBO
s33	HigherWTasynSPC	

Kinetic Law

Derived unit contains undeclared units

$$v_{132} = \mathrm{vol}\,(\mathrm{c1}) \cdot \mathrm{k1} \cdot \mathrm{s33} \cdot \mathrm{s17} \tag{267}$$

Table 410: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
k1	k1		$4.90556 \cdot 10^{-7}$		☑

7.133 Reaction re134

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

Name AutophagosomeUptakeWTasyn

Reaction equation

$$\mathrm{s17} \xrightarrow{\mathrm{s17}} \mathrm{s533} \tag{268}$$

Reactant

Table 411: Properties of each reactant.

Id	Name	SBO
s17	WTasyn	

Modifier

Table 412: Properties of each modifier.

Id	Name	SBO
s17	WTasyn	

Product

Table 413: Properties of each product.

Id	Name	SBO
s533	WTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{133} = \text{k\_OligAutophagUptake} \cdot \text{s17} \tag{269}$$

7.134 Reaction re135

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

Name M/autophagyWTasyn1Degr

Reaction equation

$$\text{s533} \xrightarrow{\text{s533}} \text{s107} \tag{270}$$

Reactant

Table 414: Properties of each reactant.

Id	Name	SBO
s533	WTasyn	

Modifier

Table 415: Properties of each modifier.

Id	Name	SBO
s533	WTasyn	

Product

Table 416: Properties of each product.

Id	Name	SBO
s107	WTasyn2merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{134} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s533} \tag{271}$$

7.135 Reaction re136

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

Name DopModAutophagosomeUptake

Reaction equation

$$\mathrm{s7} \xrightarrow{\mathrm{s7}} \mathrm{s535} \tag{272}$$

Reactant

Table 417: Properties of each reactant.

Id	Name	SBO
s7	DopModWTasyn	

Modifier

Table 418: Properties of each modifier.

Id	Name	SBO
s7	DopModWTasyn	

Product

Table 419: Properties of each product.

Id	Name	SBO
s535	DopModWTasyn	

Kinetic Law

Derived unit contains undeclared units

$$v_{135} = \text{k\_OligAutophagUptake} \cdot \text{s7} \tag{273}$$

7.136 Reaction re137

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

Name M/autophagyDopModWTasyn1Degr

Reaction equation

$$\text{s535} \xrightarrow{\text{s535}} \text{s445} \tag{274}$$

Reactant

Table 420: Properties of each reactant.

Id	Name	SBO
s535	DopModWTasyn	

Modifier

Table 421: Properties of each modifier.

Id	Name	SBO
s535	DopModWTasyn	

Product

Table 422: Properties of each product.

Id	Name	SBO
s445	DopModWTasyn2merM/Adegr	

Kinetic Law

Derived unit contains undeclared units

$$v_{136} = \mathrm{vol}\,(\mathrm{c2}) \cdot \mathrm{k\_M\_autophagyDegr} \cdot \mathrm{s535} \tag{275}$$

8 Derived Rate Equations

When interpreted as an ordinary differential equation framework, this model implies the following set of equations for the rates of change of each species.

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.

8.1 Species s51

Name Lamp2a

Initial amount 200 item

This species takes part in 28 reactions (as a reactant in re5, re8, re18, re25, re30, re83, re84, re85, re86 and as a product in re37, re38, re71, re76, re77, re78, re79, re80, re81, re82 and as a modifier in re5, re8, re18, re25, re30, re83, re84, re85, re86).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s51} = {} & v_{37} + v_{38} + v_{70} + v_{75} + v_{76} + v_{77} + v_{78} + v_{79} + v_{80} + v_{81} \\ & - v_5 - v_8 - v_{18} - v_{25} - v_{30} - v_{82} - v_{83} - v_{84} - v_{85}\end{aligned} \tag{276}$$

8.2 Species s52

Name WTasyn

Initial amount 0 item

This species takes part in three reactions (as a reactant in re70 and as a product in re37 and as a modifier in re70).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s52} = v_{37} - v_{69} \tag{277}$$

8.3 Species s53

Name WTasyn2

Initial amount 0 item

This species takes part in three reactions (as a reactant in re69 and as a product in re38 and as a modifier in re69).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s53} = v_{38} - v_{68} \tag{278}$$

8.4 Species s78

Name WTasyndegr

Initial amount 0 item

This species takes part in five reactions (as a reactant in re37, re94 and as a product in re5 and as a modifier in re37, re94).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s78} = v_{5} - v_{37} - v_{93} \tag{279}$$

8.5 Species s85

Name WTasyn2degr

Initial amount 0 item

This species takes part in six reactions (as a reactant in re38, re95 and as a product in re8, re94 and as a modifier in re38, re95).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s85} = v_{8} + v_{93} - v_{38} - v_{94} \tag{280}$$

8.6 Species s211

Name WTasyn2merCMADegr

Initial amount 0 item

This species takes part in one reaction (as a product in re69).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s211} = v_{68} \tag{281}$$

8.7 Species s213

Name WTasynCMADegr

Initial amount 0 item

This species takes part in one reaction (as a product in re70).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s213} = v_{69} \tag{282}$$

8.8 Species s482

Name DopModWTasyn2merOnLamp

Initial amount 0 item

This species takes part in three reactions (as a reactant in re72 and as a product in re33 and as a modifier in re72).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s482} = v_{33} - v_{71} \tag{283}$$

8.9 Species s483

Name DopModWTasyn3merOnLamp

Initial amount 0 item

This species takes part in three reactions (as a reactant in re73 and as a product in re72 and as a modifier in re73).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s483} = v_{71} - v_{72} \tag{284}$$

8.10 Species s484

Name DopModWTasyn4merOnLamp

Initial amount 0 item

This species takes part in three reactions (as a reactant in re74 and as a product in re73 and as a modifier in re74).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s484} = v_{72} - v_{73} \tag{285}$$

8.11 Species s489

Name DopModWTasyn7merOnLamp

Initial amount 0 item

This species takes part in three reactions (as a reactant in re35 and as a product in re34 and as a modifier in re35).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s489} = v_{34} - v_{35} \tag{286}$$

8.12 Species s490

Name DopModWTasyn6merOnLamp

Initial amount 0 item

This species takes part in three reactions (as a reactant in re34 and as a product in re75 and as a modifier in re34).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s490} = v_{74} - v_{34} \tag{287}$$

8.13 Species s491

Name DopModWTasyn5merOnLamp

Initial amount 0 item

This species takes part in three reactions (as a reactant in re75 and as a product in re74 and as a modifier in re75).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s491} = v_{73} - v_{74} \tag{288}$$

8.14 Species s492

Name DopModWTasyn8merOnLamp

Initial amount 0 item

This species takes part in three reactions (as a reactant in re36 and as a product in re35 and as a modifier in re36).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s492} = v_{35} - v_{36} \tag{289}$$

8.15 Species s493

Name DopModWTasyn9merOnLamp

Initial amount 0 item

This species takes part in one reaction (as a product in re36).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s493} = v_{36} \tag{290}$$

8.16 Species s494

Name WTasyn3merOnLamp

Initial amount 0 item

This species takes part in six reactions (as a reactant in re76, re96 and as a product in re83, re95 and as a modifier in re76, re96).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s494} = v_{82} + v_{94} - v_{75} - v_{95} \tag{291}$$

8.17 Species s495

Name WTasyn4merOnLamp

Initial amount 0 item

This species takes part in six reactions (as a reactant in re77, re97 and as a product in re84, re96 and as a modifier in re77, re97).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s495} = v_{83} + v_{95} - v_{76} - v_{96} \tag{292}$$

8.18 Species s496

Name WTasyn5merOnLamp

Initial amount 0 item

This species takes part in six reactions (as a reactant in re78, re98 and as a product in re18, re97 and as a modifier in re78, re98).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s496} = v_{18} + v_{96} - v_{77} - v_{97} \tag{293}$$

8.19 Species s498

Name WTasyn6merOnLamp

Initial amount 0 item

This species takes part in six reactions (as a reactant in re79, re99 and as a product in re85, re98 and as a modifier in re79, re99).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s498} = v_{84} + v_{97} - v_{78} - v_{98} \tag{294}$$

8.20 Species s499

Name WTasyn7merOnLamp

Initial amount 0 item

This species takes part in six reactions (as a reactant in re80, re100 and as a product in re25, re99 and as a modifier in re80, re100).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s499} = v_{25} + v_{98} - v_{79} - v_{99} \tag{295}$$

8.21 Species s500

Name WTasyn8merOnLamp

Initial amount 0 item

This species takes part in seven reactions (as a reactant in re81, re82, re101 and as a product in re100 and as a modifier in re81, re82, re101).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s500} = v_{99} - v_{80} - v_{81} - v_{100} \tag{296}$$

8.22 Species s501

Name WTasyn9merOnLamp

Initial amount 0 item

This species takes part in four reactions (as a reactant in re71 and as a product in re30, re101 and as a modifier in re71).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s501} = v_{30} + v_{100} - v_{70} \tag{297}$$

8.23 Species s536

Name DopModWTasynOnLamp

Initial amount 0 item

This species takes part in three reactions (as a reactant in re33 and as a product in re86 and as a modifier in re33).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s536} = v_{85} - v_{33} \tag{298}$$

8.24 Species s107

Name WTasyn2merM/Adegr

Initial amount 0 item

This species takes part in two reactions (as a product in re43, re135).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s107} = v_{42} + v_{134} \tag{299}$$

8.25 Species s108

Name WTasyn3merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s108} = v_{41} \tag{300}$$

8.26 Species s109

Name WTasyn4merM/Adegrr

Initial amount 0 item

This species takes part in one reaction (as a product in re40).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s109} = v_{39} \tag{301}$$

8.27 Species s110

Name WTasyn5merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re45).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s110} = v_{44} \tag{302}$$

8.28 Species s111

Name WTasyn6merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re46).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s111} = v_{45} \tag{303}$$

8.29 Species s112

Name WTasyn7merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re44).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s112} = v_{43} \tag{304}$$

8.30 Species s113

Name WTasyn8merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re41).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s113} = v_{40} \tag{305}$$

8.31 Species s445

Name DopModWTasyn2merM/Adegr

Initial amount 0 item

This species takes part in two reactions (as a product in re89, re137).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s445} = v_{88} + v_{136} \tag{306}$$

8.32 Species s446

Name DopModWTasyn3merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re88).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s446} = v_{87} \tag{307}$$

8.33 Species s447

Name DopModWTasyn4merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re87).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s447} = v_{86} \tag{308}$$

8.34 Species s448

Name DopModWTasyn6merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re90).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s448} = v_{89} \tag{309}$$

8.35 Species s451

Name DopModWTasyn8merM/Adegr

Initial amount 0 item

This species takes part in one reaction (as a product in re93).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s451} = v_{92} \tag{310}$$

8.36 Species s517

Name WTasyn4

Initial amount 0 item

This species takes part in three reactions (as a reactant in re40 and as a product in re12 and as a modifier in re40).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s517} = v_{12} - v_{39} \tag{311}$$

8.37 Species s518

Name WTasyn5

Initial amount 0 item

This species takes part in three reactions (as a reactant in re45 and as a product in re15 and as a modifier in re45).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s518} = v_{15} - v_{44} \tag{312}$$

8.38 Species s519

Name WTasyn6

Initial amount 0 item

This species takes part in three reactions (as a reactant in re46 and as a product in re19 and as a modifier in re46).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s519} = v_{19} - v_{45} \tag{313}$$

8.39 Species s520

Name WTasyn3

Initial amount 0 item

This species takes part in three reactions (as a reactant in re42 and as a product in re9 and as a modifier in re42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s520} = v_{9} - v_{41} \tag{314}$$

8.40 Species s521

Name WTasyn2

Initial amount 0 item

This species takes part in three reactions (as a reactant in re43 and as a product in re6 and as a modifier in re43).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s521} = v_{6} - v_{42} \tag{315}$$

8.41 Species s522

Name WTasyn7

Initial amount 0 item

This species takes part in three reactions (as a reactant in re44 and as a product in re22 and as a modifier in re44).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s522} = v_{22} - v_{43} \tag{316}$$

8.42 Species s523

Name WTasyn8

Initial amount 0 item

This species takes part in three reactions (as a reactant in re41 and as a product in re26 and as a modifier in re41).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s523} = v_{26} - v_{40} \tag{317}$$

8.43 Species s524

Name DopModWTasyn7merM/Adegr

Initial amount 0 item

This species takes part in two reactions (as a product in re91, re92).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s524} = v_{90} + v_{91} \tag{318}$$

8.44 Species s525

Name DopModWTasyn8

Initial amount 0 item

This species takes part in three reactions (as a reactant in re93 and as a product in re65 and as a modifier in re93).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s525} = v_{64} - v_{92} \tag{319}$$

8.45 Species s526

Name DopModWTasyn7

Initial amount 0 item

This species takes part in three reactions (as a reactant in re92 and as a product in re62 and as a modifier in re92).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s526} = v_{61} - v_{91} \tag{320}$$

8.46 Species s528

Name DopModWTasyn6

Initial amount 0 item

This species takes part in three reactions (as a reactant in re91 and as a product in re59 and as a modifier in re91).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s528} = v_{58} - v_{90} \tag{321}$$

8.47 Species s529

Name DopModWTasyn5

Initial amount 0 item

This species takes part in three reactions (as a reactant in re90 and as a product in re56 and as a modifier in re90).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s529} = v_{55} - v_{89} \tag{322}$$

8.48 Species s530

Name DopModWTasyn4

Initial amount 0 item

This species takes part in three reactions (as a reactant in re87 and as a product in re53 and as a modifier in re87).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s530} = v_{52} - v_{86} \tag{323}$$

8.49 Species s531

Name DopModWTasyn3

Initial amount 0 item

This species takes part in three reactions (as a reactant in re88 and as a product in re50 and as a modifier in re88).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s531} = v_{49} - v_{87} \tag{324}$$

8.50 Species s533

Name WTasyn

Initial amount 0 item

This species takes part in three reactions (as a reactant in re135 and as a product in re134 and as a modifier in re135).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s533} = v_{133} - v_{134} \tag{325}$$

8.51 Species s535

Name DopModWTasyn

Initial amount 0 item

This species takes part in three reactions (as a reactant in re137 and as a product in re136 and as a modifier in re137).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s535} = v_{135} - v_{136} \tag{326}$$

8.52 Species s527

Name DopModWTasyn2

Initial amount 0 item

This species takes part in three reactions (as a reactant in re89 and as a product in re48 and as a modifier in re89).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s527} = v_{47} - v_{88} \tag{327}$$

8.53 Species s1

Name DopModWTasyn5

Initial amount 8 item

This species takes part in ten reactions (as a reactant in re56, re57, re58, re122 and as a product in re54, re120 and as a modifier in re56, re57, re58, re122).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s1} = v_{53} + v_{119} - v_{55} - v_{56} - v_{57} - v_{121} \tag{328}$$

8.54 Species s2

Name DopModWTasyn4

Initial amount 8 item

This species takes part in ten reactions (as a reactant in re53, re54, re55, re121 and as a product in re51, re122 and as a modifier in re53, re54, re55, re121).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s2} = v_{50} + v_{121} - v_{52} - v_{53} - v_{54} - v_{120} \tag{329}$$

8.55 Species s3

Name SOURCE

Initial amount 1 item

This species takes part in four reactions (as a reactant in re1, re2 and as a modifier in re1, re2), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s3} = 0 \tag{330}$$

8.56 Species s5

Name DopModWTasyn3

Initial amount 8 item

This species takes part in ten reactions (as a reactant in re50, re51, re52, re123 and as a product in re49, re121 and as a modifier in re50, re51, re52, re123).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s5} = v_{48} + v_{120} - v_{49} - v_{50} - v_{51} - v_{122} \tag{331}$$

8.57 Species s6

Name DopModWTasyn2

Initial amount 0 item

This species takes part in eight reactions (as a reactant in re48, re49, re124 and as a product in re32, re123 and as a modifier in re48, re49, re124).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s6} = v_{32} + v_{122} - v_{47} - v_{48} - v_{123} \tag{332}$$

8.58 Species s7

Name DopModWTasyn

Initial amount 953 item

This species takes part in 45 reactions (as a reactant in re32, re33, re34, re35, re36, re49, re51, re54, re57, re60, re63, re66, re72, re73, re74, re75, re86, re136 and as a product in re4, re117, re118, re119, re120, re121, re122, re123, re124 and as a modifier in re32, re33, re34, re35, re36, re49, re51, re54, re57, re60, re63, re66, re72, re73, re74, re75, re86, re136).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s7} = {} & v_4 + v_{116} + v_{117} + v_{118} + v_{119} + v_{120} + v_{121} + v_{122} + 2\,v_{123} \\ & - 2\,v_{32} - v_{33} - v_{34} - v_{35} - v_{36} - v_{48} - v_{50} - v_{53} - v_{56} \\ & - v_{59} - v_{62} - v_{65} - v_{71} - v_{72} - v_{73} - v_{74} - v_{85} - v_{135}\end{aligned} \tag{333}$$

8.59 Species s17

Name WTasyn

Initial amount 1650 item

This species takes part in 51 reactions (as a reactant in re3, re4, re5, re7, re10, re13, re16, re20, re23, re27, re47, re94, re95, re96, re97, re98, re99, re100, re101, re133, re134 and as a product in re1, re125, re126, re127, re128, re129, re130, re131, re132 and as a modifier in re3, re4, re5, re7, re10, re13, re16, re20, re23, re27, re47, re94, re95, re96, re97, re98, re99, re100, re101, re133, re134).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s17} = {} & v_1 + v_{124} + v_{125} + v_{126} + v_{127} + v_{128} + v_{129} + v_{130} + 2\,v_{131} \\ & - 2\,v_3 - v_4 - v_5 - v_7 - v_{10} - v_{13} - v_{16} - v_{20} - v_{23} - v_{27} - v_{46} \\ & - v_{93} - v_{94} - v_{95} - v_{96} - v_{97} - v_{98} - v_{99} - v_{100} - v_{132} - v_{133}\end{aligned} \tag{334}$$

8.60 Species s18

Name WTasyn2

Initial amount 22 item

This species takes part in ten reactions (as a reactant in re6, re7, re8, re132 and as a product in re3, re131 and as a modifier in re6, re7, re8, re132).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s18} = v_3 + v_{130} - v_6 - v_7 - v_8 - v_{131} \tag{335}$$

8.61 Species s20

Name WTasyn3

Initial amount 8 item

This species takes part in 13 reactions (as a reactant in re9, re10, re11, re83, re131 and as a product in re7, re76, re130 and as a modifier in re9, re10, re11, re83, re131).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s20} = v_7 + v_{75} + v_{129} - v_9 - v_{10} - v_{11} - v_{82} - v_{130} \tag{336}$$

8.62 Species s21

Name DopModWTasyn6

Initial amount 8 item

This species takes part in ten reactions (as a reactant in re59, re60, re61, re120 and as a product in re57, re119 and as a modifier in re59, re60, re61, re120).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s21} = v_{56} + v_{118} - v_{58} - v_{59} - v_{60} - v_{119} \tag{337}$$

8.63 Species s22

Name Dopamine

Initial amount 750 item

This species takes part in five reactions (as a reactant in re4, re31 and as a product in re2 and as a modifier in re4, re31).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s22} = v_2 - v_4 - v_{31} \tag{338}$$

8.64 Species s23

Name WTasyn5

Initial amount 8 item

This species takes part in 13 reactions (as a reactant in re15, re16, re17, re18, re129 and as a product in re13, re78, re128 and as a modifier in re15, re16, re17, re18, re129).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s23} = v_{13} + v_{77} + v_{127} - v_{15} - v_{16} - v_{17} - v_{18} - v_{128} \tag{339}$$

8.65 Species s24

Name WTasyn4

Initial amount 8 item

This species takes part in 13 reactions (as a reactant in re12, re13, re14, re84, re130 and as a product in re10, re77, re129 and as a modifier in re12, re13, re14, re84, re130).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s24} = v_{10} + v_{76} + v_{128} - v_{12} - v_{13} - v_{14} - v_{83} - v_{129} \tag{340}$$

8.66 Species s25

Name DopModWTasyn7

Initial amount 8 item

This species takes part in ten reactions (as a reactant in re62, re63, re64, re119 and as a product in re60, re118 and as a modifier in re62, re63, re64, re119).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s25} = v_{59} + v_{117} - v_{61} - v_{62} - v_{63} - v_{118} \tag{341}$$

8.67 Species s26

Name DopModWTasyn8

Initial amount 8 item

This species takes part in ten reactions (as a reactant in re65, re66, re67, re118 and as a product in re63, re117 and as a modifier in re65, re66, re67, re118).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s26} = v_{62} + v_{116} - v_{64} - v_{65} - v_{66} - v_{117} \tag{342}$$

8.68 Species s27

Name DopModWTasyn9

Initial amount 8 item

This species takes part in five reactions (as a reactant in re68, re117 and as a product in re66 and as a modifier in re68, re117).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s27} = v_{65} - v_{67} - v_{116} \tag{343}$$

8.69 Species s29

Name WTasyn9

Initial amount 8 item

This species takes part in ten reactions (as a reactant in re29, re30, re47, re125 and as a product in re27, re71 and as a modifier in re29, re30, re47, re125).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s29} = v_{27} + v_{70} - v_{29} - v_{30} - v_{46} - v_{124} \tag{344}$$

8.70 Species s30

Name WTasyn8

Initial amount 8 item

This species takes part in 13 reactions (as a reactant in re26, re27, re28, re82, re126 and as a product in re23, re81, re125 and as a modifier in re26, re27, re28, re82, re126).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s30} = v_{23} + v_{80} + v_{124} - v_{26} - v_{27} - v_{28} - v_{81} - v_{125} \tag{345}$$

8.71 Species s31

Name WTasyn7

Initial amount 8 item

This species takes part in 13 reactions (as a reactant in re22, re23, re24, re25, re127 and as a product in re20, re80, re126 and as a modifier in re22, re23, re24, re25, re127).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s31} = v_{20} + v_{79} + v_{125} - v_{22} - v_{23} - v_{24} - v_{25} - v_{126} \tag{346}$$

8.72 Species s32

Name WTasyn6

Initial amount 8 item

This species takes part in 13 reactions (as a reactant in re19, re20, re21, re85, re128 and as a product in re16, re79, re127 and as a modifier in re19, re20, re21, re85, re128).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s32} = v_{16} + v_{78} + v_{126} - v_{19} - v_{20} - v_{21} - v_{84} - v_{127} \tag{347}$$

8.73 Species s33

Name HigherWTasynSPC

Initial amount 0 item

This species takes part in six reactions (as a reactant in re116, re133 and as a product in re47, re133 and as a modifier in re116, re133).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s33} = v_{46} + v_{132} - v_{115} - v_{132} \tag{348}$$

8.74 Species s35

Name Proteasome

Initial amount 1500 item

This species takes part in 44 reactions (as a reactant in re11, re14, re17, re21, re24, re28, re29, re52, re55, re58, re61, re64, re67, re68, re116 and as a product in re102, re103, re104, re105, re106, re107, re108, re109, re110, re111, re112, re113, re114, re115 and as a modifier in re11, re14, re17, re21, re24, re28, re29, re52, re55, re58, re61, re64, re67, re68, re116).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s35} = {} & v_{101} + v_{102} + v_{103} + v_{104} + v_{105} + v_{106} + v_{107} + v_{108} + v_{109} \\ & + v_{110} + v_{111} + v_{112} + v_{113} + v_{114} - v_{11} - v_{14} - v_{17} - v_{21} - v_{24} \\ & - v_{28} - v_{29} - v_{51} - v_{54} - v_{57} - v_{60} - v_{63} - v_{66} - v_{67} - v_{115}\end{aligned} \tag{349}$$

8.75 Species s200

Name Dopamine_degraded

Initial amount 0 item

This species takes part in one reaction (as a product in re31).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s200} = v_{31} \tag{350}$$

8.76 Species s381

Name ProtWTasyn3

Initial amount 0 item

This species takes part in three reactions (as a reactant in re102 and as a product in re11 and as a modifier in re102).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s381} = v_{11} - v_{101} \tag{351}$$

8.77 Species s383

Name ProtWTasyn4

Initial amount 0 item

This species takes part in three reactions (as a reactant in re103 and as a product in re14 and as a modifier in re103).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s383} = v_{14} - v_{102} \tag{352}$$

8.78 Species s385

Name ProtWTasyn5

Initial amount 0 item

This species takes part in three reactions (as a reactant in re104 and as a product in re17 and as a modifier in re104).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s385} = v_{17} - v_{103} \tag{353}$$

8.79 Species s387

Name ProtWTasyn6

Initial amount 0 item

This species takes part in three reactions (as a reactant in re105 and as a product in re21 and as a modifier in re105).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s387} = v_{21} - v_{104} \tag{354}$$

8.80 Species s389

Name ProtWTasyn7

Initial amount 0 item

This species takes part in three reactions (as a reactant in re106 and as a product in re24 and as a modifier in re106).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s389} = v_{24} - v_{105} \tag{355}$$

8.81 Species s391

Name ProtWTasyn8

Initial amount 0 item

This species takes part in three reactions (as a reactant in re107 and as a product in re28 and as a modifier in re107).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s391} = v_{28} - v_{106} \tag{356}$$

8.82 Species s393

Name ProtWTasyn9

Initial amount 0 item

This species takes part in three reactions (as a reactant in re108 and as a product in re29 and as a modifier in re108).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s393} = v_{29} - v_{107} \tag{357}$$

8.83 Species s473

Name ProtDopModWTasyn3

Initial amount 0 item

This species takes part in three reactions (as a reactant in re109 and as a product in re52 and as a modifier in re109).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s473} = v_{51} - v_{108} \tag{358}$$

8.84 Species s474

Name ProtDopModWTasyn4

Initial amount 0 item

This species takes part in three reactions (as a reactant in re110 and as a product in re55 and as a modifier in re110).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s474} = v_{54} - v_{109} \tag{359}$$

8.85 Species s475

Name ProtDopModWTasyn5

Initial amount 0 item

This species takes part in three reactions (as a reactant in re111 and as a product in re58 and as a modifier in re111).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s475} = v_{57} - v_{110} \tag{360}$$

8.86 Species s476

Name ProtDopModWTasyn6

Initial amount 0 item

This species takes part in three reactions (as a reactant in re112 and as a product in re61 and as a modifier in re112).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s476} = v_{60} - v_{111} \tag{361}$$

8.87 Species s477

Name ProtDopModWTasyn7

Initial amount 0 item

This species takes part in three reactions (as a reactant in re113 and as a product in re64 and as a modifier in re113).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s477} = v_{63} - v_{112} \tag{362}$$

8.88 Species s478

Name ProtDopModWTasyn8

Initial amount 0 item

This species takes part in three reactions (as a reactant in re114 and as a product in re67 and as a modifier in re114).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s478} = v_{66} - v_{113} \tag{363}$$

8.89 Species s479

Name ProtDopModWTasyn9

Initial amount 0 item

This species takes part in three reactions (as a reactant in re115 and as a product in re68 and as a modifier in re115).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s479} = v_{67} - v_{114} \tag{364}$$

8.90 Species s502

Name ProtWTasynHigherSPC

Initial amount 0 item

This species takes part in one reaction (as a product in re116).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{s502} = v_{115} \tag{365}$$

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