SBML Model Report

Model name: “Dwivedi2014 - Healthy Volunteer IL6 Model”

May 5, 2016

1 General Overview

This is a document in SBML Level 2 Version 4 format. This model was created by Vincent Knight-Schrijver[1] at August fifth 2014 at 2:12 p. m. and last time modified at April eighth 2016 at 5:40 p. m. Table 1 shows an overview of the quantities of all components of this model.

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

Element	Quantity	Element	Quantity
compartment types	0	compartments	4
species types	0	species	41
events	4	constraints	0
reactions	71	function definitions	53
global parameters	51	unit definitions	2
rules	2	initial assignments	8

Model Notes

Dwivedi2014 - Healthy Volunteer IL6ModelThis model is comprised of four models:

- [BIOMD0000000534] Healthy Volunteer model

[1] EMBL-EBI, vknight@ebi.ac.uk

- [BIOMD0000000535] Crohn's Disease - IL-6 Antibody

- [BIOMD0000000536] Crohn's Disease - sgp130FC

- [BIOMD0000000537] Crohn's Disease - IL-6Ra Antibody

Possible avenues for Interleukin-6 (IL-6) inhibition intreating Crohn's disease are compared here. Each model refers toseparate ligands. The system simulates differential activity of theligands on the signalling of IL-6. This affects Signal Transducer and Activator ofTranscription 3 (STAT3) activity on the production ofbiomarker C-Reactive Protein (CRP) expression.
Figures referring to this Healthy Volunteer model are 2c and2d.

This model is described in the article:A multiscale model of interleukin-6-mediated immune regulation in Crohn's disease and its application in drug discovery and development.Dwivedi G, Fitz L, Hegen M, Martin SW, Harrold J, Heatherington A, Li C.CPT Pharmacometrics Syst Pharmacol 2014; 3: e89

Abstract:

In this study, we have developed a multiscale systems model of interleukin (IL)-6-mediated immune regulation in Crohn's disease, by integrating intracellular signaling with organ-level dynamics of pharmacological markers underlying the disease. This model was linked to a general pharmacokinetic model for therapeutic monoclonal antibodies and used to comparatively study various biotherapeutic strategies targeting IL-6-mediated signaling in Crohn's disease. Our work illustrates techniques to develop mechanistic models of disease biology to study drug-system interaction. Despite a sparse training data set, predictions of the model were qualitatively validated by clinical biomarker data from a pilot trial with tocilizumab. Model-based analysis suggests that strategies targeting IL-6, IL-6R?, or the IL-6/sIL-6R? complex are less effective at suppressing pharmacological markers of Crohn's than dual targeting the IL-6/sIL-6R? complex in addition to IL-6 or IL-6R?. The potential value of multiscale system pharmacology modeling in drug discovery and development is also discussed.CPT: Pharmacometrics & Systems Pharmacology (2014) 3, e89; doi:10.1038/psp.2013.64; advance online publication 8 January 2014.

This model is hosted on BioModels Database and identified by: BIOMD0000000534.

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 time

Name time

Definition 3600 s

2.2 Unit substance

Name substance

Definition nmol

2.3 Unit volume

Notes Litre is the predefined SBML unit for volume.

Definition l

2.4 Unit area

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

Definition m^2

2.5 Unit length

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

Definition m

3 Compartments

This model contains four compartments.

Table 2: Properties of all compartments.

Id	Name	SBO	Spatial Dimensions	Size	Unit	Constant	Ou
mw53ffe9e6_beef_45c4_90a5_a79197ed506e	serum		3	1	litre	☑	
mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e	liver		3	1	litre	☑	
mwe9501423_9fb4_494b_b5b6_288f3fcb17b5	gut		3	1	litre	☑	
mw8fbcbf3b_47d8_4adc_8ad4_f9fc547d3e87	peripheral		3	1	litre	☑	

3.1 Compartment mw53ffe9e6_beef_45c4_90a5_a79197ed506e

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

Name serum

3.2 Compartment mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e

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

Name liver

3.3 Compartment mwe9501423_9fb4_494b_b5b6_288f3fcb17b5

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

Name gut

3.4 Compartment mw8fbcbf3b_47d8_4adc_8ad4_f9fc547d3e87

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

Name peripheral

4 Species

This model contains 41 species. The boundary condition of two of these species is set to `true` so that these species' amount cannot be changed by any reaction. Section 11 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
mwf626e95e-_543f_41e4_aad4-_c6bf60ab345b	IL6	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwbbbce920-_e8dd_4320_9386-_fc94bfb2fc99	sgp130	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw810ff751-_fa4e_4143_bd50-_169b3e325e1e	sR_IL6_sgp130	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw114aa90f-_5f5b_4fe8_9406-_361c8489b6a1	CRP	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw30ae63db-_6cd3_4b6f_93ad-_3350cd360bcc	sR	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw03db56ac-_8dc6_4931_ae82-_fef706d2ee3d	sR_IL6	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwf345ed7a-_0622_403c_b816-_c8749a2c9ded	Ab	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw1da111f2-_a036_4392_8512-_015005bdcbb7	Ab_IL6	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa2d8dd1c-_bb9a_4552_8738-_e24671651c1d	Ab_sR_IL6	mw53ffe9e6_beef_45c4-_90a5_a79197ed506e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw80848184-_e2dd_47ce_86d7-_7a21479342bd	gp130	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd2d9d93a-_3bd1_4f17_bac1-_baba9ef2d55a	R_IL6_gp130	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw4638f126-_8cb8_4021_ab41-_6ae195743ba0	sR_IL6	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw10315fa3-_6f13_4618_bda8-_a8694bd3c374	R	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw0adf3eb4-_a196_4c48_b10d-_4e9e9faaf9e1	IL6	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw7d86cc23-_a1af_44c3_bdb9-_71e9b1bb2a83	R_IL6	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw0eb6c959-_d408_45a0_a450-_928b8c5876bb	Ractive	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw42054cd7-_17af_46da_970c-_7f99151906ad	STAT3	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw39c2e431-_fdc3_4964_be29-_6ca856620b1b	pSTAT3	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd5313618-_89eb_4c8c_bc82-_66f10f966349	CRP	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	☑
mw2e464cf3-_a09c_4b7c_9f3c-_06720016a48e	sR	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw36ea78c1-_ed71_4def_96d3-_857a442d7195	CRPExtracellular	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw147d30ec-_478e_4090_b496-_128a131d29eb	sgp130	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwab41493c-_6349_45f1_a226-_3030cfed0e06	sR_IL6_sgp130	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw1d9426a3-_e1e9_49e0_ad77-_eb6833be398a	Ab_sR_IL6	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwf405687b-_7401_44ec_a0d6-_4a2b35c13e8a	Ab_IL6	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw3667a5e1-_02c9_44a0_acb4-_b0431faa822d	Ab	mw88ca8d9a_f5cf_41bf-_9d9d_fc48f6e1a19e	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw7becb5fe-_8da8_4285_a821-_0d77ad811b62	sR_IL6	mwe9501423_9fb4_494b-_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw8c9107e6-_f51d_442d_b2dc-_2bfdbb8482ca	gp130	mwe9501423_9fb4_494b-_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw824bc3d4-_1ac3_4912_9b51-_8f14ff1c96b9	R_IL6_gp130	mwe9501423_9fb4_494b-_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw6cce2109-_0e32_4dd9_98ec-_41173e8ef07d	Ractive	mwe9501423_9fb4_494b-_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw2b255f94-_8018_4b99_bde8-_918eeac45446	STAT3	mwe9501423_9fb4_494b-_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw48867e93-_f170_44e8_ac7a-_185b23e1bf3b	pSTAT3	mwe9501423_9fb4_494b-_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw0083d743-_836f_4238_a17f-_4602193d5bc0	geneProduct	mwe9501423_9fb4_494b-_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	☑
mwd31f52cc-_04e7_40e0_885f-_c7b2d9e62215	sR	mwe9501423_9fb4_494b-_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	mwe9501423_9fb4_494b_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd65b5b39_dc1b_4e77_a999_67277a880e5e	sgp130	mwe9501423_9fb4_494b_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw6335d5d7_c7b0_4bc0_b883_f7ee4915c2c3	sR_IL6_sgp130	mwe9501423_9fb4_494b_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwf7796221_1fea_4274_a93e_c00adbf5778c	Ab	mwe9501423_9fb4_494b_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw5d764bb8_5693_4ac8_9557_f65992cc5eb0	Ab_IL6	mwe9501423_9fb4_494b_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw2f3d48e0_c9c4_4a0e_aca3_9241eb573296	Ab_sR_IL6	mwe9501423_9fb4_494b_b5b6_288f3fcb17b5	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwbc2f5464_81e5_43fd_8b39_f5a2756af72f	Ab	mw8fbcbf3b_47d8_4adc_8ad4_f9fc547d3e87	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟

5 Parameters

This model contains 51 global parameters.

Table 4: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
kRLOn	kRLOn		0.384		☑
kRLOff	kRLOff		1.920		☑
kgp130On	kgp130On		20.520		☑
kgp130Off	kgp130Off		1.026		☑
kRAct	kRAct		155.000		☑
kRint	kRint		1.960		☑
kRsynth	kRsynth		0.069		☑
kRdeg	kRintBasal		0.156		☑
kIL6Synth	ksynthIL6		0.001		☑
kIL6Decay	kdegIL6		34.820		☑
kCRPDecay	kdegCRP		0.360		☑
mwfd291862-_195f-_4979_94b5-_b4e5ae1b7d52	KmSTATDephos		5.340		☑
mwd36b0261-_2480-_4cab_9222-_2cf8fb0e65dc	VmSTATDephos		0.620		☑
mw1667a8e0-_9d20-_4e59_ba51-_596148aba787	VmRDephos		0.525		☑
mwfcf06900-_5f2f-_4bb3_bb1f-_12023612b8a8	KmRDephos		155.300		☑
mw9442cd0e-_4d7c-_4ba6_a695-_f84919bdf569	kcatSTATPhos		145.000		☑
mwe8fc1900-_f07d-_468b_b5c8-_15400a583c3d	KmSTATPhos		219.000		☑

Id	Name	SBO	Value	Unit	Constant
mw08950572-_81b0-_4570_b2e4-_b9c3462c1425	KmProtSynth		10.000		☑
mw92d854a7-_8aaf-_458e_b5e2-_20a63ce9b654	VmProtSynth		330.000		☑
mw862f1480-_c60c-_4863_a565-_b2c1c77e238e	kCRPSecretion		0.500		☑
mw65c85954-_5ca0-_4df2_9e22-_ff2aa3fbe3f1	ksynthCRP		0.420		☑
mwc4c58db7-_5535-_4590_aaa5-_bbc8ed53cdab	ksynthsR		0.100		☑
mw88a75379-_f9a1-_4acc_baeb-_94c32bb736a5	kdegsR		0.300		☑
mw1f41474c-_c399-_4a60_a53a-_9926dd092e8d	ksynthsgp130		3.900		☑
mwbcb5a310-_9b67-_405e_89ec-_43d25e8cc93d	kdegsgp130		1.000		☑
mwa8d72918-_f6c2-_4d81_bf3b-_fc2b464d5e69	ksynthIL6Gut		0.002		☑
mw06241335-_b5f2-_47ed_bdcc-_ef77b68a2b98	kdegIL6Gut		1.000		☑

Id	Name	SBO	Value	Unit	Constant
mwce10678d-_8197-_408c_ad47-_1daec8104cd8	kdistTissueToSerum		0.847		☑
mwc67e1333-_079a-_4bea_9b4f-_0a1b15ddd7bb	kdistSerumToTissue		1.213		☑
mw5832a2dc-_ee18-_44df_aa59-_ccb21cb74df2	kRShedding		0.005		☑
mwf44f7f27-_5bb1-_4c7f_8964-_560fa5e1743a	kintActiveR		0.010		☑
mwa09d6284-_843e-_404e_abbb-_052fbb535197	kIL6AbBind		1000.000		☑
mw1c4bc9c3-_52ad-_4ef7_bf7f-_97b0e2101ead	kIL6AbUnbind		2.500		☑
mw640ca705-_e089-_4c64_a5f4-_9562317e8c76	kAbSerumToLiver		0.021		☑
mw43ccad8c-_cabf-_4eaf_90d5-_e06ae43be2cb	kAbLiverToSerum		0.021		☑
mw9f83bdd3-_3aa1-_47ff_abd6-_54e5ce60704a	kAbSerumToGut		0.010		☑
mwa071fdbe-_d498-_4620_a7a4-_940aa31c8161	kAbGutToSerum		0.021		☑

Id	Name	SBO	Value	Unit	Constant
mw2c605ff5-_50f5-_45f2_a70c-_53fcd866d14c	VSerum		2.880		☑
mwc691d0d1-_8c1b-_4ce4_85c6-_1315c42e97b1	VLiver		2.880		☑
mwa8283449-_0e21-_41a1_baac-_ebf697b3555a	VGut		1.440		☑
mw6729db10-_c577-_4319_b355-_2e3f11c0f942	VPeriph		0.576		☑
mw434adaf5-_cef0-_4a33_9ad2-_a4e49e1fd825	QSerumLiver		0.060		☑
mw6a5e10a9-_d442-_4dde_8ec3-_6a26c9807374	QSerumGut		0.030		☑
mw1366c3b5-_e79b-_44a7_93cc-_ee09d383eabf	QSerumPeriph		0.001		☑
mwf67caf9d-_2f4b-_4986_abf2-_e6090bbb72ce	kAbSerumToPeriph		$3.47222222222222 \cdot 10^{-4}$		☑
mw4aea26f6-_8860-_414c_97f5-_40d325196f2e	kAbPeriphToSerum		0.002		☑
mwbd1d5bc3-_d4b9-_4aec_9b86-_6f776da20a30	kdegAb		0.002		☑

Id	Name	SBO	Value	Unit	Constant
mw427cd601-_2c01-_42ea_85dc-_ab7c5a601fd8	infusionTime		1.000		☑
parameter_1	Dose		100.000		☑
Metabolite_6	Initial for Ab			10^{-26}	☑
ModelValue-_48	Initial for Dose		100.000		☑

6 Initialassignments

This is an overview of eight initialassignments.

6.1 Initialassignment mw640ca705_e089_4c64_a5f4_9562317e8c76

Derived unit contains undeclared units

Math $\frac{\text{mw434adaf5\_cef0\_4a33\_9ad2\_a4e49e1fd825}}{\text{mw2c605ff5\_50f5\_45f2\_a70c\_53fcd866d14c}}$

6.2 Initialassignment mw43ccad8c_cabf_4eaf_90d5_e06ae43be2cb

Derived unit contains undeclared units

Math $\frac{\text{mw434adaf5\_cef0\_4a33\_9ad2\_a4e49e1fd825}}{\text{mwc691d0d1\_8c1b\_4ce4\_85c6\_1315c42e97b1}}$

6.3 Initialassignment mw9f83bdd3_3aa1_47ff_abd6_54e5ce60704a

Derived unit contains undeclared units

Math $\frac{\text{mw6a5e10a9\_d442\_4dde\_8ec3\_6a26c9807374}}{\text{mw2c605ff5\_50f5\_45f2\_a70c\_53fcd866d14c}}$

6.4 Initialassignment mwa071fdbe_d498_4620_a7a4_940aa31c8161

Derived unit contains undeclared units

Math $\frac{\text{mw6a5e10a9\_d442\_4dde\_8ec3\_6a26c9807374}}{\text{mwa8283449\_0e21\_41a1\_baac\_ebf697b3555a}}$

6.5 Initialassignment mwf67caf9d_2f4b_4986_abf2_e6090bbb72ce

Derived unit contains undeclared units

Math $\frac{\text{mw1366c3b5\_e79b\_44a7\_93cc\_ee09d383eabf}}{\text{mw2c605ff5\_50f5\_45f2\_a70c\_53fcd866d14c}}$

6.6 Initialassignment mw4aea26f6_8860_414c_97f5_40d325196f2e

Derived unit contains undeclared units

Math $\frac{\text{mw1366c3b5\_e79b\_44a7\_93cc\_ee09d383eabf}}{\text{mw6729db10\_c577\_4319\_b355\_2e3f11c0f942}}$

6.7 Initialassignment Metabolite_6

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

Math [mwf345ed7a_0622_403c_b816_c8749a2c9ded]

6.8 Initialassignment ModelValue_48

Derived unit contains undeclared units

Math parameter_1

7 Function definitions

This is an overview of 53 function definitions.

7.1 Function definition function_1

Name Function for reaction_1

Arguments kRLOff, kRLOn, [mw03db56ac_8dc6_4931_ae82_fef706d2ee3d], [mw30ae63db_6cd3_4b6f_93ad_3350
vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), [mwf626e95e_543f_41e4_aad4_c6bf60ab345b]

Mathematical Expression

$$\frac{\text{kRLOn} \cdot [\text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}] \cdot [\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}] - \text{kRLOf}}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \quad (1)$$

7.2 Function definition function_2

Name Function for reaction_2

Arguments kgp130Off, kgp130On, [mw03db56ac_8dc6_4931_ae82_fef706d2ee3d], vol (mw53ffe9e6_beef_45c4_90
[mw810ff751_fa4e_4143_bd50_169b3e325e1e], [mwbbbce920_e8dd_4320_9386_fc94bfb2fc99]

Mathematical Expression

$$\frac{\text{kgp130On} \cdot [\text{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}] \cdot [\text{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}] - \text{kgp}}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \quad (2)$$

7.3 Function definition function_3

Name Function for reaction_3

Arguments kIL6Synth, vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e)

Mathematical Expression

$$\frac{\text{kIL6Synth}}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{3}$$

7.4 Function definition function_4

Name Function for reaction_4

Arguments kIL6Decay, vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), [mwf626e95e_543f_41e4_aad4_c6bf60

Mathematical Expression

$$\frac{\text{kIL6Decay} \cdot [\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{4}$$

7.5 Function definition function_5

Name Function for reaction_5

Arguments kCRPDecay, [mw114aa90f_5f5b_4fe8_9406_361c8489b6a1], vol (mw53ffe9e6_beef_45c4_90a5_a7919

Mathematical Expression

$$\frac{\text{kCRPDecay} \cdot [\text{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}]}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{5}$$

7.6 Function definition function_6

Name Function for reaction_6

Arguments kgp130Off, kgp130On, [mw4638f126_8cb8_4021_ab41_6ae195743ba0], [mw80848184_e2dd_47ce_86
vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), [mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a]

Mathematical Expression

$$\frac{\text{kgp130On} \cdot [\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}] \cdot [\text{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}] - \text{k}}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{6}$$

7.7 Function definition function_7

Name Function for reaction_7

Arguments kRLOff, kRLOn, [mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1], [mw10315fa3_6f13_4618_bda8_a869
[mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83], vol(mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e)

Mathematical Expression

$$\frac{\text{kRLOn} \cdot [\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}] \cdot [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}] - \text{kRLOf}}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (7)$$

7.8 Function definition function_8

Name Function for reaction_8

Arguments kgp130Off, kgp130On, [mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83], [mw80848184_e2dd_47ce_86
vol(mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), [mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a]

Mathematical Expression

$$\frac{\text{kgp130On} \cdot [\text{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}] \cdot [\text{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}] - \text{kg}}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (8)$$

7.9 Function definition function_9

Name Function for reaction_16

Arguments kRAct, vol(mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), [mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d5

Mathematical Expression

$$\frac{\text{kRAct} \cdot [\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}]}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (9)$$

7.10 Function definition function_10

Name Function for reaction_9

Arguments [mw0eb6c959_d408_45a0_a450_928b8c5876bb], [mw42054cd7_17af_46da_970c_7f99151906ad],
vol(mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), mw9442cd0e_4d7c_4ba6_a695_f84919bdf569,
mwe8fc1900_f07d_468b_b5c8_15400a583c3d

Mathematical Expression

$$\frac{\frac{\text{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569} \cdot [\text{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}] \cdot [\text{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}]}{\text{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d} + [\text{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}]}}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (10)$$

7.11 Function definition function_11

Name Function for reaction_10

Arguments [mw39c2e431_fdc3_4964_be29_6ca856620b1b], vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), mwd36b0261_2480_4cab_9222_2cf8fb0e65dc, mwfd291862_195f_4979_94b5_b4e5ae1b7d52

Mathematical Expression

$$\frac{\frac{\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc} \cdot [\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}]}{\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52} + [\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}]}}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (11)$$

7.12 Function definition function_12

Name Function for reaction_15

Arguments kRdeg, [mw10315fa3_6f13_4618_bda8_a8694bd3c374], vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a1

Mathematical Expression

$$\frac{\text{kRdeg} \cdot [\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}]}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (12)$$

7.13 Function definition function_13

Name Function for reaction_11

Arguments kRint, [mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83], vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19

Mathematical Expression

$$\frac{\text{kRint} \cdot [\text{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}]}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (13)$$

7.14 Function definition function_14

Name Function for reaction_12

Arguments kRint, vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), [mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55

Mathematical Expression

$$\frac{\text{kRint} \cdot [\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}]}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (14)$$

7.15 Function definition function_15

Name Function for reaction_13

Arguments [mw0eb6c959_d408_45a0_a450_928b8c5876bb], vol(mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), mwf44f7f27_5bb1_4c7f_8964_560fa5e1743a

Mathematical Expression

$$\frac{\text{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a} \cdot [\text{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}]}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{15}$$

7.16 Function definition function_16

Name Function for reaction_14

Arguments kRsynth, vol(mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e)

Mathematical Expression

$$\frac{\text{kRsynth}}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{16}$$

7.17 Function definition function_17

Name Function for reaction_41

Arguments kgp130Off, kgp130On, [mw7becb5fe_8da8_4285_a821_0d77ad811b62], [mw824bc3d4_1ac3_4912_9b5
[mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca], vol(mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\text{kgp130On} \cdot [\text{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}] \cdot [\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}] - \text{kgp}}{\text{vol}(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{17}$$

7.18 Function definition function_18

Name Function for reaction_46

Arguments kRAct, [mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9], vol(mwe9501423_9fb4_494b_b5b6_288f3fcb1

Mathematical Expression

$$\frac{\text{kRAct} \cdot [\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}]}{\text{vol}(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{18}$$

7.19 Function definition function_19

Name Function for reaction_42

Arguments [mw2b255f94_8018_4b99_bde8_918eeac45446], [mw6cce2109_0e32_4dd9_98ec_41173e8ef07d], mw9442cd0e_4d7c_4ba6_a695_f84919bdf569, mwe8fc1900_f07d_468b_b5c8_15400a583c3d, vol(mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\frac{\text{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569} \cdot [\text{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}] \cdot [\text{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}]}{\text{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d} + [\text{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}]}}{\text{vol}(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \quad (19)$$

7.20 Function definition function_20

Name Function for reaction_43

Arguments [mw48867e93_f170_44e8_ac7a_185b23e1bf3b], mwd36b0261_2480_4cab_9222_2cf8fb0e65dc, vol(mwe9501423_9fb4_494b_b5b6_288f3fcb17b5), mwfd291862_195f_4979_94b5_b4e5ae1b7d52

Mathematical Expression

$$\frac{\frac{\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc} \cdot [\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}]}{\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52} + [\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}]}}{\text{vol}(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \quad (20)$$

7.21 Function definition function_21

Name Function for reaction_44

Arguments kRint, [mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9], vol(mwe9501423_9fb4_494b_b5b6_288f3fcb17

Mathematical Expression

$$\frac{\text{kRint} \cdot [\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}]}{\text{vol}(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \quad (21)$$

7.22 Function definition function_22

Name Function for reaction_45

Arguments [mw6cce2109_0e32_4dd9_98ec_41173e8ef07d], vol(mwe9501423_9fb4_494b_b5b6_288f3fcb17b5), mwf44f7f27_5bb1_4c7f_8964_560fa5e1743a

Mathematical Expression

$$\frac{\text{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a} \cdot [\text{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}]}{\text{vol}(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \quad (22)$$

7.23 Function definition function_23

Name Function for mwb675e13a_26c0_4b18_a8c3_0f5a62090ba4

Arguments [mw0eb6c959_d408_45a0_a450_928b8c5876bb], mw1667a8e0_9d20_4e59_ba51_596148aba787, vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), mwfcf06900_5f2f_4bb3_bb1f_12023612b8a8

Mathematical Expression

$$\frac{\frac{\text{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787} \cdot [\text{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}]}{\text{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8} + [\text{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}]}}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{23}$$

7.24 Function definition function_24

Name Function for mw64df7c9e_35da_4c7f_be56_c5dabfb060b6

Arguments mw1667a8e0_9d20_4e59_ba51_596148aba787, [mw6cce2109_0e32_4dd9_98ec_41173e8ef07d], vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5), mwfcf06900_5f2f_4bb3_bb1f_12023612b8a8

Mathematical Expression

$$\frac{\frac{\text{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787} \cdot [\text{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}]}{\text{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8} + [\text{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}]}}{\text{vol}\,(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{24}$$

7.25 Function definition function_25

Name Function for mw391f3b8e_5649_4851_b2e2_782cb3e015b6

Arguments kRsynth, vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e)

Mathematical Expression

$$\frac{\text{kRsynth}}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{25}$$

7.26 Function definition function_26

Name Function for mw4a00a3a4_778f_4952_8100_2dc3cc2b7046

Arguments kRdeg, [mw80848184_e2dd_47ce_86d7_7a21479342bd], vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a

Mathematical Expression

$$\frac{\text{kRdeg} \cdot [\text{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}]}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{26}$$

7.27 Function definition function_27

Name Function for mw6db30657_4e56_4c3a_8575_9c67393dde4f

Arguments kRsynth, vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\text{kRsynth}}{\text{vol}\,(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{27}$$

7.28 Function definition function_28

Name Function for mw6f470e13_f0e4_4294_83d8_59dd5670d10c

Arguments kRdeg, [mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca], vol (mwe9501423_9fb4_494b_b5b6_288f3fcb1

Mathematical Expression

$$\frac{\text{kRdeg} \cdot [\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}]}{\text{vol}\,(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{28}$$

7.29 Function definition function_29

Name Function for mw4c099d5c_200f_474e_8ec1_59e9223a8afd

Arguments kRLOff, kRLOn, [mw2c9b0499_3325_4394_8af3_bbf653a944a0], [mw7becb5fe_8da8_4285_a821_0d7
[mwd31f52cc_04e7_40e0_885f_c7b2d9e62215], vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\text{kRLOn} \cdot [\text{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215}] \cdot [\text{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}] - \text{kRLOf}}{\text{vol}\,(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{29}$$

7.30 Function definition function_30

Name Function for mwa812f08f_1035_42bd_82d2_72d691308f88

Arguments kRLOff, kRLOn, [mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1], [mw2e464cf3_a09c_4b7c_9f3c_0672
[mw4638f126_8cb8_4021_ab41_6ae195743ba0], vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e)

Mathematical Expression

$$\frac{\text{kRLOn} \cdot [\text{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e}] \cdot [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}] - \text{kRLOff}}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{30}$$

7.31 Function definition function_31

Name Function for mwab0012ac_e5f2_4904_9893_820fd210402e

Arguments mw862f1480_c60c_4863_a565_b2c1c77e238e, vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), [mwd5313618_89eb_4c8c_bc82_66f10f966349]

Mathematical Expression

$$\frac{\text{mw862f1480\_c60c\_4863\_a565\_b2c1c77e238e} \cdot [\text{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349}]}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{31}$$

7.32 Function definition function_32

Name Function for mwff2ebcf1_dcf1_47b9_9cac_7306fc6f7f76

Arguments vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), mw65c85954_5ca0_4df2_9e22_ff2aa3fbe3f1

Mathematical Expression

$$\frac{\text{mw65c85954\_5ca0\_4df2\_9e22\_ff2aa3fbe3f1}}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{32}$$

7.33 Function definition function_33

Name Function for mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c

Arguments kgp130Off, kgp130On, [mw6335d5d7_c7b0_4bc0_b883_f7ee4915c2c3], [mw7becb5fe_8da8_4285_a82 [mwd65b5b39_dc1b_4e77_a999_67277a880e5e], vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\text{kgp130On} \cdot [\text{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e}] \cdot [\text{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}] - \text{kgp}}{\text{vol}\,(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{33}$$

7.34 Function definition function_34

Name Function for mwd77df15b_fed7_41a8_a3d6_b0f6c590c5f6

Arguments kgp130Off, kgp130On, [mw147d30ec_478e_4090_b496_128a131d29eb], [mw4638f126_8cb8_4021_ab4 vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), [mwab41493c_6349_45f1_a226_3030cfed0e06]

Mathematical Expression

$$\frac{\text{kgp130On} \cdot [\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}] \cdot [\text{mw147d30ec\_478e\_4090\_b496\_128a131d29eb}] - \text{kgp}}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{34}$$

7.35 Function definition function_35

Name Function for mw432fde6e_59ab_47f0_9fb1_086433a602e3

Arguments vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), mwc4c58db7_5535_4590_aaa5_bbc8ed53cdab

Mathematical Expression

$$\frac{\text{mwc4c58db7\_5535\_4590\_aaa5\_bbc8ed53cdab}}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{35}$$

7.36 Function definition function_36

Name Function for mw41c27823_d7ee_4554_9eac_3d5beec8e854

Arguments [mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc], vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), mw88a75379_f9a1_4acc_baeb_94c32bb736a5

Mathematical Expression

$$\frac{\text{mw88a75379\_f9a1\_4acc\_baeb\_94c32bb736a5} \cdot [\text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}]}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{36}$$

7.37 Function definition function_37

Name Function for mw50c6744c_e883_4612_8663_e38750cbad1b

Arguments mw1f41474c_c399_4a60_a53a_9926dd092e8d, vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e)

Mathematical Expression

$$\frac{\text{mw1f41474c\_c399\_4a60\_a53a\_9926dd092e8d}}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{37}$$

7.38 Function definition function_38

Name Function for mwb6a99eb5_ea4c_4733_98dd_1daf5ec6b0db

Arguments vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), [mwbbbce920_e8dd_4320_9386_fc94bfb2fc99], mwbcb5a310_9b67_405e_89ec_43d25e8cc93d

Mathematical Expression

$$\frac{\text{mwbcb5a310\_9b67\_405e\_89ec\_43d25e8cc93d} \cdot [\text{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}]}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{38}$$

7.39 Function definition function_39

Name Function for mw1ce0c484_681f_4d85_8ffe_392d0c100cfa

Arguments mwa8d72918_f6c2_4d81_bf3b_fc2b464d5e69, vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\text{mwa8d72918\_f6c2\_4d81\_bf3b\_fc2b464d5e69}}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{39}$$

7.40 Function definition function_40

Name Function for mwf913ea0b_785a_4701_ac91_b18ab5dd5a89

Arguments mw06241335_b5f2_47ed_bdcc_ef77b68a2b98, [mw2c9b0499_3325_4394_8af3_bbf653a944a0], vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\text{mw06241335\_b5f2\_47ed\_bdcc\_ef77b68a2b98} \cdot [\text{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{40}$$

7.41 Function definition function_41

Name Function for mw71d90b81_8211_4039_8807_12a7fe03206c

Arguments [mw114aa90f_5f5b_4fe8_9406_361c8489b6a1], vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), mw5832a2dc_ee18_44df_aa59_ccb21cb74df2

Mathematical Expression

$$\frac{\text{mw5832a2dc\_ee18\_44df\_aa59\_ccb21cb74df2} \cdot [\text{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}]}{\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{41}$$

7.42 Function definition function_43

Name Function for mw30abb016_4300_4f40_a1b3_f865d0a45707

Arguments [mw1da111f2_a036_4392_8512_015005bdcbb7], vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}]}{\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{42}$$

7.43 Function definition function_45

Name Function for mwba7f4605_8571_439b_b3ab_eb0b43808db8

Arguments vol(mw53ffe9e6_beef_45c4_90a5_a79197ed506e), mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30, [mwf345ed7a_0622_403c_b816_c8749a2c9ded]

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}]}{\text{vol}(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{43}$$

7.44 Function definition function_47

Name Function for mw8b4e96ed_0bcc_4ad6_b560_366e173a6e6b

Arguments [mw5d764bb8_5693_4ac8_9557_f65992cc5eb0], mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30, vol(mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}]}{\text{vol}(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{44}$$

7.45 Function definition function_50

Name Function for mw3e76b10b_5420_4828_8c70_b91b767132d0

Arguments vol(mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30, [mwf405687b_7401_44ec_a0d6_4a2b35c13e8a]

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}]}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{45}$$

7.46 Function definition function_52

Name Function for mw2ae288ab_7d03_4a84_a024_c711ad2b77e6

Arguments [mw3667a5e1_02c9_44a0_acb4_b0431faa822d], vol(mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}]}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{46}$$

7.47 Function definition function_53

Name Function for mw9629d028_fcc0_4886_9e4d_36eecdb0381d

Arguments mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30, vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5), [mwf7796221_1fea_4274_a93e_c00adbf5778c]

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}]}{\text{vol}\,(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \tag{47}$$

7.48 Function definition function_51

Name Function for mw5d9fcd0c_ca08_4444_b509_2ea4777e0025

Arguments [mw1d9426a3_e1e9_49e0_ad77_eb6833be398a], vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a}]}{\text{vol}\,(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{48}$$

7.49 Function definition function_42

Name Function for mwb1879013_5fcd_490c_8b01_eaf84df15b9a [1]

Arguments mw1c4bc9c3_52ad_4ef7_bf7f_97b0e2101ead, [mw1da111f2_a036_4392_8512_015005bdcbb7], vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), mwa09d6284_843e_404e_abbb_052fbb535197, [mwf345ed7a_0622_403c_b816_c8749a2c9ded], [mwf626e95e_543f_41e4_aad4_c6bf60ab345b]

Mathematical Expression

$$\frac{\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}] \cdot [\text{mwf345ed7a\_0622}}{\text{vol}\,(\text{mw53ffe9e6\_be}} \tag{49}$$

7.50 Function definition function_44

Name Function for mw14d351b9_623a_48e8_a21c_854411039120

Arguments vol (mw53ffe9e6_beef_45c4_90a5_a79197ed506e), [mwa2d8dd1c_bb9a_4552_8738_e24671651c1d], mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}]}{\text{vol}\,(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})} \tag{50}$$

7.51 Function definition function_49

Name Function for mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1 [1]

Arguments [mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1], mw1c4bc9c3_52ad_4ef7_bf7f_97b0e2101ead, [mw3667a5e1_02c9_44a0_acb4_b0431faa822d], vol (mw88ca8d9a_f5cf_41bf_9d9d_fc48f6e1a19e), mwa09d6284_843e_404e_abbb_052fbb535197, [mwf405687b_7401_44ec_a0d6_4a2b35c13e8a]

Mathematical Expression

$$\frac{\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}] \cdot [\text{mw0adf3eb4\_a19}}{\text{vol}\,(\text{mw88ca8d9a\_f5}} \quad (51)$$

7.52 Function definition function_48

Name Function for mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1 [1]

Arguments mw1c4bc9c3_52ad_4ef7_bf7f_97b0e2101ead, [mw2c9b0499_3325_4394_8af3_bbf653a944a0], [mw5d764bb8_5693_4ac8_9557_f65992cc5eb0], mwa09d6284_843e_404e_abbb_052fbb535197, vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5), [mwf7796221_1fea_4274_a93e_c00adbf5778c]

Mathematical Expression

$$\frac{\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\text{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}] \cdot [\text{mw2c9b0499\_332}}{\text{vol}\,(\text{mwe9501423\_9f}} \quad (52)$$

7.53 Function definition function_46

Name Function for mw5be6711a_526a_4a58_80c6_d353dcabdf87

Arguments [mw2f3d48e0_c9c4_4a0e_aca3_9241eb573296], mwbd1d5bc3_d4b9_4aec_9b86_6f776da20a30, vol (mwe9501423_9fb4_494b_b5b6_288f3fcb17b5)

Mathematical Expression

$$\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296}]}{\text{vol}\,(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \quad (53)$$

8 Rules

This is an overview of two rules.

8.1 Rule mw0083d743_836f_4238_a17f_4602193d5bc0

Rule mw0083d743_836f_4238_a17f_4602193d5bc0 is an assignment rule for species mw0083d743_836f_4238_a17f_4602193d5bc0:

$$\text{mw0083d743\_836f\_4238\_a17f\_4602193d5bc0} = \frac{\text{mw92d854a7\_8aaf\_458e\_b5e2\_20a63ce9b654} \cdot [\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}]}{\text{mw08950572\_81b0\_4570\_b2e4\_b9c3462c1425} + [\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}]} \tag{54}$$

8.2 Rule mwd5313618_89eb_4c8c_bc82_66f10f966349

Rule mwd5313618_89eb_4c8c_bc82_66f10f966349 is an assignment rule for species mwd5313618_89eb_4c8c_bc82_66f10f966349:

$$\text{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349} = \frac{\text{mw92d854a7\_8aaf\_458e\_b5e2\_20a63ce9b654} \cdot [\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}]}{\text{mw08950572\_81b0\_4570\_b2e4\_b9c3462c1425} + [\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}]} \tag{55}$$

9 Events

This is an overview of four events. Each event is initiated whenever its trigger condition switches from `false` to `true`. A delay function postpones the effects of an event to a later time point. At the time of execution, an event can assign values to species, parameters or compartments if these are not set to constant.

9.1 Event event_1

Name Week0

Trigger condition

$$\text{time} \geq 0.1 \tag{56}$$

Delay

$$0 \tag{57}$$

Assignment

$$\begin{aligned} &\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded} \\ &= [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}] + \text{ModelValue\_48} \cdot 2.346 \end{aligned} \tag{58}$$

9.2 Event event_2

Name Week4

Trigger condition

$$\text{time} \geq 672 \tag{59}$$

Delay

$$0 \tag{60}$$

Assignment

$$\begin{aligned}&\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}\\&= [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}] + \text{ModelValue\_48} \cdot 2.346\end{aligned} \tag{61}$$

9.3 Event event_3

Name Week8

Trigger condition

$$\text{time} \geq 1344 \tag{62}$$

Delay

$$0 \tag{63}$$

Assignment

$$\begin{aligned}&\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}\\&= [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}] + \text{ModelValue\_48} \cdot 2.346\end{aligned} \tag{64}$$

9.4 Event event_4

Name Week12

Trigger condition

$$\text{time} \geq 2016 \tag{65}$$

Delay

$$0 \tag{66}$$

Assignment

$$\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded} = \text{Metabolite\_6} + \text{ModelValue\_48} \cdot 2.346 \tag{67}$$

10 Reactions

This model contains 71 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	reaction_1	reaction_1	mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc + mwf626e95e_543f_41e4_aad4_c6bf60ab345b ⟶ mw03db56ac_8dc6_4931_ae82_fef706d2	
2	reaction_2	reaction_2	mw03db56ac_8dc6_4931_ae82_fef706d2ee3d + mwbbbce920_e8dd_4320_9386_fc94bfb2fc99 ⟶ mw03db56ac_8dc6_4931_ae82_fef706d2	
3	reaction_3	reaction_3	∅ ⟶ mwf626e95e_543f_41e4_aad4_c6bf60ab345b	
4	reaction_4	reaction_4	mwf626e95e_543f_41e4_aad4_c6bf60ab345b ⟶ mwf626e95e_543f_41e4_aad4_c6bf60ab3	
5	reaction_5	reaction_5	mw114aa90f_5f5b_4fe8_9406_361c8489b6a1 ⟶ mw114aa90f_5f5b_4fe8_9406_361c8489	
6	reaction_6	reaction_6	mw4638f126_8cb8_4021_ab41_6ae195743ba0 + mw80848184_e2dd_47ce_86d7_7a21479342bd ⟶ mw4638f126_8cb8_4021_ab41_6ae195	
7	reaction_7	reaction_7	mw10315fa3_6f13_4618_bda8_a8694bd3c374 + mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1 ⟶ mw0adf3eb4_a196_4c48_b10d_4e9e9faaf	
8	reaction_8	reaction_8	mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83 + mw80848184_e2dd_47ce_86d7_7a21479342bd ⟶ mw7d86cc23_a1af_44c3_bdb9_71e9b1b	
9	reaction_16	reaction_16	mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a ⟶ mwd2d9d93a_3bd1_4f17_bac1_baba9ef2	
10	reaction_9	reaction_9	mw42054cd7_17af_46da_970c_7f99151906ad + mw0eb6c959_d408_45a0_a450_928b8c5876bb ⟶ mw0eb6c959_d408_45a0_a450_928b8c5	
			mw0eb6c959_d408_45a0_a450_928b8c5876bb	
11	reaction_10	reaction_10	mw39c2e431_fdc3_4964_be29_6ca856620b1b ⟶ mw39c2e431_fdc3_4964_be29_6ca8566	
12	reaction_15	reaction_15	mw10315fa3_6f13_4618_bda8_a8694bd3c374 ⟶ mw10315fa3_6f13_4618_bda8_a8694bd	

№	Id	Name	Reaction Equation	SBO
13	reaction_11	reaction_11	mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83	mw7d86cc23_a1af_44c3_bdb9_71e9b1bb
14	reaction_12	reaction_12	mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	mwd2d9d93a_3bd1_4f17_bac1_baba9ef2
15	reaction_13	reaction_13	mw0eb6c959_d408_45a0_a450_928b8c5876bb	mw0eb6c959_d408_45a0_a450_928b8c5
16	reaction_14	reaction_14	∅ ⟶ mw10315fa3_6f13_4618_bda8_a8694bd3c374	
17	reaction_41	reaction_41	mw7becb5fe_8da8_4285_a821_0d77ad811b62 + mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca	mw7becb5fe_8da8_4285_a821_0d77ad8
18	reaction_46	reaction_46	mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9	mw824bc3d4_1ac3_4912_9b51_8f14ff1c9
19	reaction_42	reaction_42	mw2b255f94_8018_4b99_bde8_918eeac45446 + mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	mw2b255f94_8018_4b99_bde8_918eeac4
			mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	
20	reaction_43	reaction_43	mw48867e93_f170_44e8_ac7a_185b23e1bf3b	mw48867e93_f170_44e8_ac7a_185b23e1
21	reaction_44	reaction_44	mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9	mw824bc3d4_1ac3_4912_9b51_8f14ff1c9
22	reaction_45	reaction_45	mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	mw6cce2109_0e32_4dd9_98ec_41173e8e
23	mwb675e13a-_26c0-_4b18_a8c3-_0f5a62090ba4	mwb675e13a_26c0_4b18_a8c3-_0f5a62090ba4	mw0eb6c959_d408_45a0_a450_928b8c5876bb	mw0eb6c959_d408_45a0_a450_928b8c5
24	mw64df7c9e-_35da-_4c7f_be56-_c5dabfb060b6	mw64df7c9e_35da_4c7f_be56_c5dabfb060b6	mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	mw6cce2109_0e32_4dd9_98ec_41173e8e
25	mw391f3b8e-_5649-_4851_b2e2-_782cb3e015b6	mw391f3b8e_5649_4851_b2e2-_782cb3e015b6	∅ ⟶ mw80848184_e2dd_47ce_86d7_7a21479342bd	

№	Id	Name	Reaction Equation	SBO
26	mw4a00a3a4-_778f-_4952_8100-_2dc3cc2b7046	mw4a00a3a4_778f_4952_8100-_2dc3cc2b7046	mw80848184_e2dd_47ce_86d7_7a21479342bd	mw80848184_e2dd_47ce_86d7_7a2147
27	mw6db30657-_4e56-_4c3a_8575-_9c67393dde4f	mw6db30657_4e56_4c3a_8575-_9c67393dde4f	∅ ⟶ mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca	
28	mw6f470e13-_f0e4-_4294_83d8-_59dd5670d10c	mw6f470e13_f0e4_4294_83d8-_59dd5670d10c	mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca	mw8c9107e6_f51d_442d_b2dc_2bfdbb84
29	mwfb35eca9-_7afc-_4ba8_a46c-_738cab57eb9f	mwfb35eca9_7afc_4ba8_a46c_738cab57eb9f	mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	mw30ae63db_6cd3_4b6f_93ad_3350cd3
30	mw61d2af92-_6da5-_41ce_b90e-_aa6f430e6ba1	mw61d2af92_6da5_41ce_b90e_aa6f430e6ba1	mwf626e95e_543f_41e4_aad4_c6bf60ab345b	mwf626e95e_543f_41e4_aad4_c6bf60ab3
31	mw4c099d5c-_200f-_474e_8ec1-_59e9223a8afd	mw4c099d5c_200f_474e_8ec1_59e9223a8afd	mwd31f52cc_04e7_40e0_885f_c7b2d9e62215 + mw2c9b0499_3325_4394_8af3_bbf653a944a0	mw2c9b0499_3325_4394_8af3_bbf653a

№	Id	Name	Reaction Equation	SBO
32	mwbe8567ce_3349_4442_8b12_53cd9bc168e7	mwbe8567ce_3349_4442_8b12_53cd9bc168e7	mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	mw03db56ac_8dc6_4931_ae82_fef706d2
33	mw12a9fa7e_a273_4c1e_b970_ed33f3a9a705	mw12a9fa7e_a273_4c1e_b970_ed33f3a9a705	mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	mw30ae63db_6cd3_4b6f_93ad_3350cd3
34	mw1046000b_e1e8_4f6f_82a1_532d2aa793bb	mw1046000b_e1e8_4f6f_82a1_532d2aa793bb	mwf626e95e_543f_41e4_aad4_c6bf60ab345b	mwf626e95e_543f_41e4_aad4_c6bf60ab3
35	mw8e8b65a8_6830_4091_9a40_19645e8fe554	mw8e8b65a8_6830_4091_9a40_19645e8fe554	mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	mw03db56ac_8dc6_4931_ae82_fef706d2
36	mwa812f08f_1035_42bd_82d2_72d691308f88	mwa812f08f_1035_42bd_82d2_72d691308f88	mw2e464cf3_a09c_4b7c_9f3c_06720016a48e + mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1	mw0adf3eb4_a196_4c48_b10d_4e9e9faaf
37	mwab0012ac_e5f2_4904_9893_820fd210402e	mwab0012ac_e5f2_4904_9893_820fd210402e	mwd5313618_89eb_4c8c_bc82_66f10f966349	mwd5313618_89eb_4c8c_bc82_66f10f96

№	Id	Name	Reaction Equation	SBO
38	mwcdc24bd4-_d9e4-_47fe_8300-_d222d853111c	mwcdc24bd4_d9e4_47fe_8300-_d222d853111c	mw114aa90f_5f5b_4fe8_9406_361c8489b6a1 ⟸	mw114aa90f_5f5b_4fe8_9406_361c8489
39	mwff2ebcf1-_dcf1-_47b9_9cac-_7306fc6f7f76	mwff2ebcf1_dcf1_47b9_9cac_7306fc6f7f76	∅ ⟶ mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	
40	mw1c5a5ff7-_5130-_490f_a740-_6a744ccf8a94	mw1c5a5ff7_5130_490f_a740_6a744ccf8a94	mwbbbce920_e8dd_4320_9386_fc94bfb2fc99 ⟸	mwbbbce920_e8dd_4320_9386_fc94bfb2
41	mw7b56053c-_7256-_4703_a8c3-_4fd46b2c23d0	mw7b56053c_7256_4703_a8c3-_4fd46b2c23d0	mwbbbce920_e8dd_4320_9386_fc94bfb2fc99 ⟸	mwbbbce920_e8dd_4320_9386_fc94bfb2
42	mw8be158f1-_ea81-_45bf_80d4-_6e31cd83fe6c	mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c	mwd65b5b39_dc1b_4e77_a999_67277a880e5e + mw7becb5fe_8da8_4285_a821_0d77ad811b62 ⟸	mw6335d5d7_c7b0_4bc0_b883_f7ee491
43	mwd77df15b-_fed7-_41a8_a3d6-_b0f6c590c5f6	mwd77df15b_fed7_41a8_a3d6_b0f6c590c5f6	mw4638f126_8cb8_4021_ab41_6ae195743ba0 + mw147d30ec_478e_4090_b496_128a131d29eb ⟸	mw147d30ec_478e_4090_b496_128a13

№	Id	Name	Reaction Equation	SBO
44	mw01babcdf-_0f03-_46b0_81b1-_201cc846e361	mw01babcdf_0f03_46b0_81b1-_201cc846e361	mw810ff751_fa4e_4143_bd50_169b3e325e1e ⟸	mw810ff751_fa4e_4143_bd50_169b3e32
45	mwae5dbb44-_7de5-_46ab_8c20-_ac4f8956b0f0	mwae5dbb44_7de5_46ab_8c20-_ac4f8956b0f0	mw810ff751_fa4e_4143_bd50_169b3e325e1e ⟸	mw810ff751_fa4e_4143_bd50_169b3e32
46	mw432fde6e-_59ab-_47f0_9fb1-_086433a602e3	mw432fde6e_59ab_47f0_9fb1_086433a602e3	∅ ⟶ mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	
47	mw41c27823-_d7ee-_4554_9eac-_3d5beec8e854	mw41c27823_d7ee_4554_9eac-_3d5beec8e854	mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc ⟸	mw30ae63db_6cd3_4b6f_93ad_3350cd36
48	mw50c6744c-_e883-_4612_8663-_e38750cbad1b	mw50c6744c_e883_4612_8663-_e38750cbad1b	∅ ⟶ mwbbbce920_e8dd_4320_9386_fc94bfb2fc99	
49	mwb6a99eb5-_ea4c-_4733_98dd-_1daf5ec6b0db	mwb6a99eb5_ea4c_4733_98dd-_1daf5ec6b0db	mwbbbce920_e8dd_4320_9386_fc94bfb2fc99 ⟸	mwbbbce920_e8dd_4320_9386_fc94bfb2

№	Id	Name	Reaction Equation	SBO
50	mw1ce0c484-_681f-_4d85_8ffe-_392d0c100cfa	mw1ce0c484_681f_4d85_8ffe_392d0c100cfa	∅ ⟶ mw2c9b0499_3325_4394_8af3_bbf653a944a0	
51	mwf913ea0b-_785a-_4701_ac91-_b18ab5dd5a89	mwf913ea0b_785a_4701_ac91-_b18ab5dd5a89	mw2c9b0499_3325_4394_8af3_bbf653a944a0 ⟶ mw2c9b0499_3325_4394_8af3_bbf653a9	
52	mw71d90b81-_8211-_4039_8807-_12a7fe03206c	mw71d90b81_8211_4039_8807-_12a7fe03206c	mw114aa90f_5f5b_4fe8_9406_361c8489b6a1 ⟶ mw114aa90f_5f5b_4fe8_9406_361c8489b mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	
53	mwdf4ba845-_7271-_4ada_b43f-_fdac83df3b5c	mwdf4ba845_7271_4ada_b43f_fdac83df3b5c	mwf345ed7a_0622_403c_b816_c8749a2c9ded ⟵ mwf345ed7a_0622_403c_b816_c8749a2	
54	mwb1879013-_5fcd-_490c_8b01-_eaf84df15b9a	mwb1879013_5fcd_490c_8b01_eaf84df15b9a	mwf626e95e_543f_41e4_aad4_c6bf60ab345b + mwf345ed7a_0622_403c_b816_c8749a2c9ded ⟵ mw1da111f2_a036_4392_8512_015005b	
55	mw30abb016-_4300-_4f40_a1b3-_f865d0a45707	mw30abb016_4300_4f40_a1b3-_f865d0a45707	mw1da111f2_a036_4392_8512_015005bdcbb7 ⟶ mw1da111f2_a036_4392_8512_015005b	

№	Id	Name	Reaction Equation	SBO
56	mw14d351b9_623a_48e8_a21c_854411039120	mw14d351b9_623a_48e8_a21c_854411039120	mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	mwa2d8dd1c_bb9a_4552_8738_e24671
57	mwba7f4605_8571_439b_b3ab_eb0b43808db8	mwba7f4605_8571_439b_b3ab_eb0b43808db8	mwf345ed7a_0622_403c_b816_c8749a2c9ded	mwf345ed7a_0622_403c_b816_c8749a2
58	mw5be6711a_526a_4a58_80c6_d353dcabdf87	mw5be6711a_526a_4a58_80c6_d353dcabdf87	mw2f3d48e0_c9c4_4a0e_aca3_9241eb573296	mw2f3d48e0_c9c4_4a0e_aca3_9241eb57
59	mw8b4e96ed_0bcc_4ad6_b560_366e173a6e6b	mw8b4e96ed_0bcc_4ad6_b560_366e173a6e6b	mw5d764bb8_5693_4ac8_9557_f65992cc5eb0	mw5d764bb8_5693_4ac8_9557_f65992c
60	mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1	mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1	mwf7796221_1fea_4274_a93e_c00adbf5778c + mw2c9b0499_3325_4394_8af3_bbf653a944a0	mw2c9b0499_3325_4394_8af3_bbf653a
61	mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1	mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1	mw3667a5e1_02c9_44a0_acb4_b0431faa822d + mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1	mw0adf3eb4_a196_4c48_b10d_4e9e9faaf

№	Id	Name	Reaction Equation	SBO
62	mw3e76b10b-_5420-_4828_8c70-_b91b767132d0	mw3e76b10b_5420_4828_8c70-_b91b767132d0	mwf405687b_7401_44ec_a0d6_4a2b35c13e8a	mwf405687b_7401_44ec_a0d6_4a2b35c
63	mw5d9fcd0c-_ca08-_4444_b509-_2ea4777e0025	mw5d9fcd0c_ca08_4444_b509-_2ea4777e0025	mw1d9426a3_e1e9_49e0_ad77_eb6833be398a	mw1d9426a3_e1e9_49e0_ad77_eb6833b
64	mw131e3c9d-_e77d-_48c0_bdbb-_77b2c10aaf3d	mw131e3c9d_e77d_48c0_bdbb-_77b2c10aaf3d	mwf345ed7a_0622_403c_b816_c8749a2c9ded	mwf345ed7a_0622_403c_b816_c8749a2
65	mw14940d1f-_6a1f-_47cb_8170-_801ba645f4c1	mw14940d1f_6a1f_47cb_8170-_801ba645f4c1	mwf345ed7a_0622_403c_b816_c8749a2c9ded	mwf345ed7a_0622_403c_b816_c8749a2
66	mwa2f4d966-_ae2c-_4ed2_b522-_12755f12ff15	mwa2f4d966_ae2c_4ed2_b522_12755f12ff15	mw1da111f2_a036_4392_8512_015005bdcbb7	mw1da111f2_a036_4392_8512_015005
67	mwb62106e7-_e959-_4a1d_9a00-_b36d4e19a48f	mwb62106e7_e959_4a1d_9a00-_b36d4e19a48f	mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	mwa2d8dd1c_bb9a_4552_8738_e24671

№	Id	Name	Reaction Equation	SBO
68	mw700e677e-_d3b6-_4a97_991f-_279605a9abeb	mw700e677e_d3b6_4a97_991f-_279605a9abeb	mw1da111f2_a036_4392_8512_015005bdcbb7	mw1da111f2_a036_4392_8512_015005
69	mwad648b6c-_45ca-_4f41_9747-_06db1f6060fc	mwad648b6c_45ca_4f41_9747_06db1f6060fc	mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	mwa2d8dd1c_bb9a_4552_8738_e24671
70	mw2ae288ab-_7d03-_4a84_a024-_c711ad2b77e6	mw2ae288ab_7d03_4a84_a024-_c711ad2b77e6	mw3667a5e1_02c9_44a0_acb4_b0431faa822d	mw3667a5e1_02c9_44a0_acb4_b0431faa
71	mw9629d028-_fcc0-_4886_9e4d-_36eecdb0381d	mw9629d028_fcc0_4886_9e4d-_36eecdb0381d	mwf7796221_1fea_4274_a93e_c00adbf5778c	mwf7796221_1fea_4274_a93e_c00adbf57

10.1 Reaction reaction_1

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

Name reaction_1

Reaction equation

$$\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc} + \mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b} \underset{(68)}{\overset{\mathrm{mw03db56ac\_8dc6\_4}}{\rightleftharpoons}}$$

Reactants

Table 6: Properties of each reactant.

Id	Name	SBO
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	

Modifiers

Table 7: Properties of each modifier.

Id	Name	SBO
mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	sR_IL6	
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	

Product

Table 8: Properties of each product.

Id	Name	SBO
mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$v_1 = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_1}\left(\mathrm{kRLOff}, \mathrm{kRLOn}, [\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}], [\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]\right) \tag{69}$$

$$\mathrm{function\_1}\left(\mathrm{kRLOff}, \mathrm{kRLOn}, [\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}], [\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]\right) = \frac{\mathrm{kRLOn} \cdot [\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}] \cdot [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}] - \mathrm{kRLO}}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{70}$$

$$\mathrm{function\_1}\left(\mathrm{kRLOff}, \mathrm{kRLOn}, [\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}], [\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]\right) = \frac{\mathrm{kRLOn} \cdot [\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}] \cdot [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}] - \mathrm{kRLO}}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{71}$$

10.2 Reaction `reaction_2`

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

Name reaction_2

Reaction equation

$$\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d} + \mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99} \rightleftharpoons \mathrm{mw03db56ac\_8dc6\_4} \tag{72}$$

Reactants

Table 9: Properties of each reactant.

Id	Name	SBO
`mw03db56ac_8dc6_4931_ae82_fef706d2ee3d`	sR_IL6	
`mwbbbce920_e8dd_4320_9386_fc94bfb2fc99`	sgp130	

Modifiers

Table 10: Properties of each modifier.

Id	Name	SBO
mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	sR_IL6	
mw810ff751_fa4e_4143_bd50_169b3e325e1e	sR_IL6_sgp130	
mwbbbce920_e8dd_4320_9386_fc94bfb2fc99	sgp130	

Product

Table 11: Properties of each product.

Id	Name	SBO
mw810ff751_fa4e_4143_bd50_169b3e325e1e	sR_IL6_sgp130	

Kinetic Law

Derived unit contains undeclared units

$$v_2 = \mathrm{vol}\,(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}) \cdot \mathrm{function\_2}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}], \mathrm{vol}\,(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}), [\mathrm{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e}], [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}]) \tag{73}$$

$$\mathrm{function\_2}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}], \mathrm{vol}\,(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}), [\mathrm{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e}], [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}]) \tag{74}$$
$$= \frac{\mathrm{kgp130On} \cdot [\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}] \cdot [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}] - \mathrm{kg}}{\mathrm{vol}\,(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})}$$

$$\mathrm{function\_2}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}], \mathrm{vol}\,(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}), [\mathrm{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e}], [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}]) \tag{75}$$
$$= \frac{\mathrm{kgp130On} \cdot [\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}] \cdot [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}] - \mathrm{kg}}{\mathrm{vol}\,(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e})}$$

10.3 Reaction `reaction_3`

This is an irreversible reaction of no reactant forming one product.

Name reaction_3

Reaction equation

$$\emptyset \longrightarrow \text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b} \tag{76}$$

Product

Table 12: Properties of each product.

Id	Name	SBO
`mwf626e95e_543f_41e4_aad4_c6bf60ab345b`	IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_3 = {} & \text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \\ & \cdot \text{function\_3}\left(\text{kIL6Synth}, \text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) \end{aligned} \tag{77}$$

$$\begin{aligned} & \text{function\_3}\left(\text{kIL6Synth}, \text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) \\ & = \frac{\text{kIL6Synth}}{\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \end{aligned} \tag{78}$$

$$\begin{aligned} & \text{function\_3}\left(\text{kIL6Synth}, \text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) \\ & = \frac{\text{kIL6Synth}}{\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \end{aligned} \tag{79}$$

10.4 Reaction `reaction_4`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name reaction_4

Reaction equation

$$\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b} \xrightarrow{\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}} \emptyset \tag{80}$$

Reactant

Table 13: Properties of each reactant.

Id	Name	SBO
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	

Modifier

Table 14: Properties of each modifier.

Id	Name	SBO
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	

Kinetic Law

Derived unit contains undeclared units

$$v_4 = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_4}\left(\mathrm{kIL6Decay}, \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]\right) \tag{81}$$

$$\mathrm{function\_4}\left(\mathrm{kIL6Decay}, \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]\right) = \frac{\mathrm{kIL6Decay} \cdot [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{82}$$

$$\mathrm{function\_4}\left(\mathrm{kIL6Decay}, \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]\right) = \frac{\mathrm{kIL6Decay} \cdot [\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{83}$$

10.5 Reaction reaction_5

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name reaction_5

Reaction equation

$$\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1} \xrightarrow{\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}} \emptyset \tag{84}$$

Reactant

Table 15: Properties of each reactant.

Id	Name	SBO
mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	CRP	

Modifier

Table 16: Properties of each modifier.

Id	Name	SBO
mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	CRP	

Kinetic Law

Derived unit contains undeclared units

$$v_5 = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_5}\left(\mathrm{kCRPDecay}, [\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) \tag{85}$$

$$\mathrm{function\_5}\left(\mathrm{kCRPDecay}, [\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) = \frac{\mathrm{kCRPDecay} \cdot [\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{86}$$

$$\mathrm{function\_5}\left(\mathrm{kCRPDecay}, [\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) = \frac{\mathrm{kCRPDecay} \cdot [\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{87}$$

10.6 Reaction reaction_6

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

Name reaction_6

Reaction equation

$$\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0} + \mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd} \rightleftharpoons \mathrm{mw4638f126\_8cb8\_} \tag{88}$$

Reactants

Table 17: Properties of each reactant.

Id	Name	SBO
mw4638f126_8cb8_4021_ab41_6ae195743ba0	sR_IL6	
mw80848184_e2dd_47ce_86d7_7a21479342bd	gp130	

Modifiers

Table 18: Properties of each modifier.

Id	Name	SBO
mw4638f126_8cb8_4021_ab41_6ae195743ba0	sR_IL6	
mw80848184_e2dd_47ce_86d7_7a21479342bd	gp130	
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Product

Table 19: Properties of each product.

Id	Name	SBO
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_6 = {} & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \\ & \cdot \mathrm{function\_6}\left(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}], \right. \\ & \qquad [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \\ & \qquad \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \qquad \left.[\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}]\right) \end{aligned} \tag{89}$$

$$\begin{aligned} & \mathrm{function\_6}\left(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}], \right. \\ & [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \\ & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \left.[\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}]\right) \\ = {} & \frac{\mathrm{kgp130On} \cdot [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}] \cdot [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}] - }{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \end{aligned} \tag{90}$$

$$\begin{aligned}&\text{function\_6}\left(\text{kgp130Off}, \text{kgp130On}, [\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}], \right. \\ &[\text{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \\ &\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ &\left.[\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}]\right) \\ &= \frac{\text{kgp130On} \cdot [\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}] \cdot [\text{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}] - \text{I}}{\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)}\end{aligned} \tag{91}$$

10.7 Reaction `reaction_7`

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

Name reaction_7

Reaction equation

$$\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374} + \text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1} \overset{\text{mw0adf3eb4\_a196\_4c}}{\rightleftharpoons} \tag{92}$$

Reactants

Table 20: Properties of each reactant.

Id	Name	SBO
`mw10315fa3_6f13_4618_bda8_a8694bd3c374`	R	
`mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1`	IL6	

Modifiers

Table 21: Properties of each modifier.

Id	Name	SBO
`mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1`	IL6	
`mw10315fa3_6f13_4618_bda8_a8694bd3c374`	R	
`mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83`	R_IL6	

Product

Table 22: Properties of each product.

Id	Name	SBO
`mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83`	R_IL6	

Kinetic Law

Derived unit contains undeclared units

$$v_7 = \text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}) \cdot \text{function\_7}(\text{kRLOff}, \text{kRLOn}, [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}], [\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}], [\text{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], \text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})) \quad (93)$$

$$\text{function\_7}(\text{kRLOff}, \text{kRLOn}, [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}], [\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}], [\text{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], \text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})) = \frac{\text{kRLOn} \cdot [\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}] \cdot [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}] - \text{kRLO}}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (94)$$

$$\text{function\_7}(\text{kRLOff}, \text{kRLOn}, [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}], [\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}], [\text{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], \text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})) = \frac{\text{kRLOn} \cdot [\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}] \cdot [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}] - \text{kRLO}}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \quad (95)$$

10.8 Reaction `reaction_8`

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

Name reaction_8

Reaction equation

$$\text{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83} + \text{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd} \rightleftharpoons \text{mw7d86cc23\_a1af\_} \quad (96)$$

Reactants

Table 23: Properties of each reactant.

Id	Name	SBO
`mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83`	R_IL6	
`mw80848184_e2dd_47ce_86d7_7a21479342bd`	gp130	

Modifiers

Table 24: Properties of each modifier.

Id	Name	SBO
mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83	R_IL6	
mw80848184_e2dd_47ce_86d7_7a21479342bd	gp130	
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Product

Table 25: Properties of each product.

Id	Name	SBO
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Kinetic Law

Derived unit contains undeclared units

$$v_8 = \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}) \cdot \mathrm{function\_8}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), [\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}]) \tag{97}$$

$$\mathrm{function\_8}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), [\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}]) \tag{98}$$

$$= \frac{\mathrm{kgp130On} \cdot [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}] \cdot [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}] - \mathrm{k}}{\mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})}$$

$$\mathrm{function\_8}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), [\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}]) \tag{99}$$

$$= \frac{\mathrm{kgp130On} \cdot [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}] \cdot [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}] - \mathrm{k}}{\mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})}$$

10.9 Reaction reaction_16

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

Name reaction_16

Reaction equation

$$\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a} \xrightarrow{\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}} \text{mw0eb6c959\_d408\_45a} \tag{100}$$

Reactant

Table 26: Properties of each reactant.

Id	Name	SBO
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Modifier

Table 27: Properties of each modifier.

Id	Name	SBO
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Product

Table 28: Properties of each product.

Id	Name	SBO
mw0eb6c959_d408_45a0_a450_928b8c5876bb	Ractive	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_9 = {} & \text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \\ & \cdot \text{function\_9}\left(\text{kRAct}, \text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \right. \\ & \left. \left[\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]\right) \end{aligned} \tag{101}$$

$$\begin{aligned}&\text{function\_9}\left(\text{kRAct}, \text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right),\right.\\&\left.\left[\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]\right)\\&\quad=\frac{\text{kRAct}\cdot\left[\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]}{\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)}\end{aligned}\tag{102}$$

$$\begin{aligned}&\text{function\_9}\left(\text{kRAct}, \text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right),\right.\\&\left.\left[\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]\right)\\&\quad=\frac{\text{kRAct}\cdot\left[\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]}{\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)}\end{aligned}\tag{103}$$

10.10 Reaction `reaction_9`

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

Name reaction_9

Reaction equation

$$\text{mw42054cd7\_17af\_46da\_970c\_7f99151906ad} + \text{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb} \xrightarrow{\text{mw0eb6c959\_d408\_}} \tag{104}$$

Reactants

Table 29: Properties of each reactant.

Id	Name	SBO
`mw42054cd7_17af_46da_970c_7f99151906ad`	STAT3	
`mw0eb6c959_d408_45a0_a450_928b8c5876bb`	Ractive	

Modifiers

Table 30: Properties of each modifier.

Id	Name	SBO
`mw0eb6c959_d408_45a0_a450_928b8c5876bb`	Ractive	
`mw42054cd7_17af_46da_970c_7f99151906ad`	STAT3	

Products

Table 31: Properties of each product.

Id	Name	SBO
mw39c2e431_fdc3_4964_be29_6ca856620b1b	pSTAT3	
mw0eb6c959_d408_45a0_a450_928b8c5876bb	Ractive	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{10} = \mathrm{vol}(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}) \\ \cdot \mathrm{function\_10}([\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}], \\ [\mathrm{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}], \\ \mathrm{vol}(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), \\ \mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569}, \\ \mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d}) \end{aligned} \tag{105}$$

$$\begin{aligned} &\mathrm{function\_10}([\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}], \\ &[\mathrm{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}], \\ &\mathrm{vol}(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), \\ &\mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569}, \\ &\mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d}) \end{aligned} \tag{106}$$

$$= \frac{\frac{\mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569} \cdot [\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}] \cdot [\mathrm{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}]}{\mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d} + [\mathrm{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}]}}{\mathrm{vol}(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})}$$

$$\begin{aligned} &\mathrm{function\_10}([\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}], \\ &[\mathrm{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}], \\ &\mathrm{vol}(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), \\ &\mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569}, \\ &\mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d}) \end{aligned} \tag{107}$$

$$= \frac{\frac{\mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569} \cdot [\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}] \cdot [\mathrm{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}]}{\mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d} + [\mathrm{mw42054cd7\_17af\_46da\_970c\_7f99151906ad}]}}{\mathrm{vol}(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})}$$

10.11 Reaction reaction_10

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

Name reaction_10

Reaction equation

$$\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b} \xrightarrow{\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}} \text{mw42054cd7\_17af\_46} \tag{108}$$

Reactant

Table 32: Properties of each reactant.

Id	Name	SBO
mw39c2e431_fdc3_4964_be29_6ca856620b1b	pSTAT3	

Modifier

Table 33: Properties of each modifier.

Id	Name	SBO
mw39c2e431_fdc3_4964_be29_6ca856620b1b	pSTAT3	

Product

Table 34: Properties of each product.

Id	Name	SBO
mw42054cd7_17af_46da_970c_7f99151906ad	STAT3	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{11} = {} & \text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \\ & \cdot \text{function\_11}\left(\left[\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}\right],\right. \\ & \qquad \text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \qquad \text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc}, \\ & \qquad \left.\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}\right) \end{aligned} \tag{109}$$

$$\begin{aligned}&\text{function\_11}\left([\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}],\right.\\&\quad\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right),\\&\quad\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc},\\&\quad\left.\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}\right)\\&=\frac{\frac{\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc}\cdot[\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}]}{\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}+[\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}]}}{\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)}\end{aligned} \tag{110}$$

$$\begin{aligned}&\text{function\_11}\left([\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}],\right.\\&\quad\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right),\\&\quad\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc},\\&\quad\left.\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}\right)\\&=\frac{\frac{\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc}\cdot[\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}]}{\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}+[\text{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b}]}}{\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)}\end{aligned} \tag{111}$$

10.12 Reaction `reaction_15`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name reaction_15

Reaction equation

$$\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374} \xrightarrow{\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}} \emptyset \tag{112}$$

Reactant

Table 35: Properties of each reactant.

Id	Name	SBO
`mw10315fa3_6f13_4618_bda8_a8694bd3c374`	R	

Modifier

Table 36: Properties of each modifier.

Id	Name	SBO
`mw10315fa3_6f13_4618_bda8_a8694bd3c374`	R	

Kinetic Law

Derived unit contains undeclared units

$$v_{12} = \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}) \cdot \mathrm{function\_12}\,(\mathrm{kRdeg}, [\mathrm{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})) \tag{113}$$

$$\mathrm{function\_12}\,(\mathrm{kRdeg}, [\mathrm{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})) = \frac{\mathrm{kRdeg} \cdot [\mathrm{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}]}{\mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{114}$$

$$\mathrm{function\_12}\,(\mathrm{kRdeg}, [\mathrm{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})) = \frac{\mathrm{kRdeg} \cdot [\mathrm{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374}]}{\mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{115}$$

10.13 Reaction `reaction_11`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name reaction_11

Reaction equation

$$\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83} \xrightarrow{\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}} \emptyset \tag{116}$$

Reactant

Table 37: Properties of each reactant.

Id	Name	SBO
`mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83`	R_IL6	

Modifier

Table 38: Properties of each modifier.

Id	Name	SBO
mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83	R_IL6	

Kinetic Law

Derived unit contains undeclared units

$$v_{13} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \cdot \mathrm{function\_13}\left(\mathrm{kRint}, [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) \tag{117}$$

$$\mathrm{function\_13}\left(\mathrm{kRint}, [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) = \frac{\mathrm{kRint} \cdot [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{118}$$

$$\mathrm{function\_13}\left(\mathrm{kRint}, [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) = \frac{\mathrm{kRint} \cdot [\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83}]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{119}$$

10.14 Reaction reaction_12

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name reaction_12

Reaction equation

$$\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a} \xrightarrow{\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}} \emptyset \tag{120}$$

Reactant

Table 39: Properties of each reactant.

Id	Name	SBO
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Modifier

Table 40: Properties of each modifier.

Id	Name	SBO
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{14} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \cdot \mathrm{function\_14}\left(\mathrm{kRint}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \left[\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]\right) \tag{121}$$

$$\mathrm{function\_14}\left(\mathrm{kRint}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \left[\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]\right) = \frac{\mathrm{kRint} \cdot \left[\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{122}$$

$$\mathrm{function\_14}\left(\mathrm{kRint}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \left[\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]\right) = \frac{\mathrm{kRint} \cdot \left[\mathrm{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a}\right]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{123}$$

10.15 Reaction reaction_13

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name reaction_13

Reaction equation

$$\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb} \xrightarrow{\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}} \emptyset \tag{124}$$

Reactant

Table 41: Properties of each reactant.

Id	Name	SBO
mw0eb6c959_d408_45a0_a450_928b8c5876bb	Ractive	

Modifier

Table 42: Properties of each modifier.

Id	Name	SBO
mw0eb6c959_d408_45a0_a450_928b8c5876bb	Ractive	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{15} = {} & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \\ & \cdot \mathrm{function\_15}\left(\left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right],\right. \\ & \qquad \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \qquad \left.\mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a}\right) \end{aligned} \tag{125}$$

$$\begin{aligned} & \mathrm{function\_15}\left(\left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right],\right. \\ & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \left.\mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a}\right) \\ = {} & \frac{\mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a} \cdot \left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \end{aligned} \tag{126}$$

$$\begin{aligned} & \mathrm{function\_15}\left(\left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right],\right. \\ & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \left.\mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a}\right) \\ = {} & \frac{\mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a} \cdot \left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \end{aligned} \tag{127}$$

10.16 Reaction reaction_14

This is an irreversible reaction of no reactant forming one product.

Name reaction_14

Reaction equation

$$\emptyset \longrightarrow \mathrm{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374} \tag{128}$$

Product

Table 43: Properties of each product.

Id	Name	SBO
mw10315fa3_6f13_4618_bda8_a8694bd3c374	R	

Kinetic Law

Derived unit contains undeclared units

$$v_{16} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \cdot \mathrm{function\_16}\left(\mathrm{kRsynth}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) \tag{129}$$

$$\mathrm{function\_16}\left(\mathrm{kRsynth}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) = \frac{\mathrm{kRsynth}}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{130}$$

$$\mathrm{function\_16}\left(\mathrm{kRsynth}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) = \frac{\mathrm{kRsynth}}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{131}$$

10.17 Reaction reaction_41

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

Name reaction_41

Reaction equation

$$\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62} + \mathrm{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca} \rightleftharpoons \mathrm{mw7becb5fe\_8da8\_4} \tag{132}$$

Reactants

Table 44: Properties of each reactant.

Id	Name	SBO
mw7becb5fe_8da8_4285_a821_0d77ad811b62	sR_IL6	
mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca	gp130	

Modifiers

Table 45: Properties of each modifier.

Id	Name	SBO
mw7becb5fe_8da8_4285_a821_0d77ad811b62	sR_IL6	
mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9	R_IL6_gp130	
mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca	gp130	

Product

Table 46: Properties of each product.

Id	Name	SBO
mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9	R_IL6_gp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{17} = \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}) \cdot \mathrm{function\_17}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], [\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}], [\mathrm{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}], \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \tag{133}$$

$$\mathrm{function\_17}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], [\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}], [\mathrm{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}], \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \tag{134}$$

$$= \frac{\mathrm{kgp130On} \cdot [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}] \cdot [\mathrm{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}] - \mathrm{k}}{\mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})}$$

$$\mathrm{function\_17}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], [\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}], [\mathrm{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}], \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \tag{135}$$

$$= \frac{\mathrm{kgp130On} \cdot [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}] \cdot [\mathrm{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}] - \mathrm{k}}{\mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})}$$

10.18 Reaction reaction_46

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

Name reaction_46

Reaction equation

$$\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9} \xrightarrow{\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}} \text{mw6cce2109\_0e32\_4dd} \tag{136}$$

Reactant

Table 47: Properties of each reactant.

Id	Name	SBO
mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9	R_IL6_gp130	

Modifier

Table 48: Properties of each modifier.

Id	Name	SBO
mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9	R_IL6_gp130	

Product

Table 49: Properties of each product.

Id	Name	SBO
mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	Ractive	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{18} = {} & \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \\ & \cdot \text{function\_18}\left(\text{kRAct}, [\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}], \right. \\ & \qquad \left. \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) \end{aligned} \tag{137}$$

$$\begin{aligned}&\text{function\_18}\left(\text{kRAct}, [\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}],\right.\\&\left.\quad \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\\&\quad = \frac{\text{kRAct} \cdot [\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned} \tag{138}$$

$$\begin{aligned}&\text{function\_18}\left(\text{kRAct}, [\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}],\right.\\&\left.\quad \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\\&\quad = \frac{\text{kRAct} \cdot [\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned} \tag{139}$$

10.19 Reaction `reaction_42`

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

Name reaction_42

Reaction equation

$$\text{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446} + \text{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d} \xrightarrow{\text{mw2b255f94\_8018\_4}} \tag{140}$$

Reactants

Table 50: Properties of each reactant.

Id	Name	SBO
`mw2b255f94_8018_4b99_bde8_918eeac45446`	STAT3	
`mw6cce2109_0e32_4dd9_98ec_41173e8ef07d`	Ractive	

Modifiers

Table 51: Properties of each modifier.

Id	Name	SBO
`mw2b255f94_8018_4b99_bde8_918eeac45446`	STAT3	
`mw6cce2109_0e32_4dd9_98ec_41173e8ef07d`	Ractive	

Products

Table 52: Properties of each product.

Id	Name	SBO
mw48867e93_f170_44e8_ac7a_185b23e1bf3b	pSTAT3	
mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	Ractive	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{19} = \mathrm{vol}(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}) \\ \cdot \mathrm{function\_19}([\mathrm{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}], \\ [\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}], \\ \mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569}, \\ \mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d}, \\ \mathrm{vol}(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \end{aligned} \tag{141}$$

$$\begin{aligned} &\mathrm{function\_19}([\mathrm{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}], \\ &[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}], \\ &\mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569}, \\ &\mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d}, \\ &\mathrm{vol}(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \end{aligned} \tag{142}$$

$$= \frac{\frac{\mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569} \cdot [\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}] \cdot [\mathrm{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}]}{\mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d} + [\mathrm{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}]}}{\mathrm{vol}(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})}$$

$$\begin{aligned} &\mathrm{function\_19}([\mathrm{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}], \\ &[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}], \\ &\mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569}, \\ &\mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d}, \\ &\mathrm{vol}(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \end{aligned} \tag{143}$$

$$= \frac{\frac{\mathrm{mw9442cd0e\_4d7c\_4ba6\_a695\_f84919bdf569} \cdot [\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}] \cdot [\mathrm{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}]}{\mathrm{mwe8fc1900\_f07d\_468b\_b5c8\_15400a583c3d} + [\mathrm{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446}]}}{\mathrm{vol}(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})}$$

10.20 Reaction reaction_43

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

Name reaction_43

Reaction equation

$$\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b} \xrightarrow{\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}} \text{mw2b255f94\_8018\_4b9} \tag{144}$$

Reactant

Table 53: Properties of each reactant.

Id	Name	SBO
mw48867e93_f170_44e8_ac7a_185b23e1bf3b	pSTAT3	

Modifier

Table 54: Properties of each modifier.

Id	Name	SBO
mw48867e93_f170_44e8_ac7a_185b23e1bf3b	pSTAT3	

Product

Table 55: Properties of each product.

Id	Name	SBO
mw2b255f94_8018_4b99_bde8_918eeac45446	STAT3	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{20} = {} & \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \\ & \cdot \text{function\_20}\left(\left[\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}\right],\right. \\ & \qquad \text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc}, \\ & \qquad \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \\ & \qquad \left.\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}\right) \end{aligned} \tag{145}$$

$$\begin{aligned}&\text{function\_20}\left(\left[\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}\right],\right.\\&\quad\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc},\\&\quad\left.\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right),\right.\\&\qquad\left.\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}\right)\\&\quad=\frac{\frac{\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc}\cdot\left[\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}\right]}{\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}+\left[\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}\right]}}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned}\tag{146}$$

$$\begin{aligned}&\text{function\_20}\left(\left[\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}\right],\right.\\&\quad\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc},\\&\quad\left.\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right),\right.\\&\qquad\left.\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}\right)\\&\quad=\frac{\frac{\text{mwd36b0261\_2480\_4cab\_9222\_2cf8fb0e65dc}\cdot\left[\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}\right]}{\text{mwfd291862\_195f\_4979\_94b5\_b4e5ae1b7d52}+\left[\text{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b}\right]}}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned}\tag{147}$$

10.21 Reaction `reaction_44`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name reaction_44

Reaction equation

$$\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}\xrightarrow{\text{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}}\emptyset\tag{148}$$

Reactant

Table 56: Properties of each reactant.

Id	Name	SBO
`mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9`	R_IL6_gp130	

Modifier

Table 57: Properties of each modifier.

Id	Name	SBO
`mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9`	R_IL6_gp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{21} = \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \cdot \mathrm{function\_21}\left(\mathrm{kRint}, [\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}], \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) \tag{149}$$

$$\mathrm{function\_21}\left(\mathrm{kRint}, [\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}], \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) = \frac{\mathrm{kRint} \cdot [\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}]}{\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{150}$$

$$\mathrm{function\_21}\left(\mathrm{kRint}, [\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}], \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) = \frac{\mathrm{kRint} \cdot [\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9}]}{\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{151}$$

10.22 Reaction `reaction_45`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name reaction_45

Reaction equation

$$\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d} \xrightarrow{\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}} \emptyset \tag{152}$$

Reactant

Table 58: Properties of each reactant.

Id	Name	SBO
`mw6cce2109_0e32_4dd9_98ec_41173e8ef07d`	Ractive	

Modifier

Table 59: Properties of each modifier.

Id	Name	SBO
mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	Ractive	

Kinetic Law

Derived unit contains undeclared units

$$v_{22} = \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \cdot \mathrm{function\_22}\left(\left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right], \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a}\right) \tag{153}$$

$$\mathrm{function\_22}\left(\left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right], \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a}\right) = \frac{\mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a} \cdot \left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right]}{\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{154}$$

$$\mathrm{function\_22}\left(\left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right], \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a}\right) = \frac{\mathrm{mwf44f7f27\_5bb1\_4c7f\_8964\_560fa5e1743a} \cdot \left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right]}{\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{155}$$

10.23 Reaction mwb675e13a_26c0_4b18_a8c3_0f5a62090ba4

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

Name mwb675e13a_26c0_4b18_a8c3_0f5a62090ba4

Reaction equation

$$\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb} \xrightarrow{\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}} \mathrm{mwd2d9d93a\_3bd1\_4} \tag{156}$$

Reactant

Table 60: Properties of each reactant.

Id	Name	SBO
mw0eb6c959_d408_45a0_a450_928b8c5876bb	Ractive	

Modifier

Table 61: Properties of each modifier.

Id	Name	SBO
mw0eb6c959_d408_45a0_a450_928b8c5876bb	Ractive	

Product

Table 62: Properties of each product.

Id	Name	SBO
mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a	R_IL6_gp130	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{23} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \\ \cdot \mathrm{function\_23}\left(\left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right],\right. \\ \mathrm{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787}, \\ \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ \left.\mathrm{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8}\right) \end{aligned} \tag{157}$$

$$\begin{aligned} &\mathrm{function\_23}\left(\left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right],\right. \\ &\mathrm{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787}, \\ &\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ &\left.\mathrm{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8}\right) \\ &= \frac{\frac{\mathrm{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787}\cdot\left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right]}{\mathrm{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8}+\left[\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}\right]}}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \end{aligned} \tag{158}$$

$$\begin{aligned}&\text{function\_23}\left([\text{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}],\right.\\&\quad\text{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787},\\&\quad\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right),\\&\quad\left.\text{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8}\right)\\&\quad=\frac{\text{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787}\cdot[\text{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}]}{\text{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8}+[\text{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb}]}\\&\qquad\qquad\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\end{aligned}\tag{159}$$

10.24 Reaction mw64df7c9e_35da_4c7f_be56_c5dabfb060b6

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

Name mw64df7c9e_35da_4c7f_be56_c5dabfb060b6

Reaction equation

$$\text{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\xrightarrow{\text{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}}\text{mw824bc3d4\_1ac3\_49}\tag{160}$$

Reactant

Table 63: Properties of each reactant.

Id	Name	SBO
mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	Ractive	

Modifier

Table 64: Properties of each modifier.

Id	Name	SBO
mw6cce2109_0e32_4dd9_98ec_41173e8ef07d	Ractive	

Product

Table 65: Properties of each product.

Id	Name	SBO
mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9	R_IL6_gp130	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{24} = \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \\ \cdot \mathrm{function\_24}\left(\mathrm{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787},\right. \\ \left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right], \\ \left.\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \right. \\ \left.\mathrm{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8}\right) \end{aligned} \tag{161}$$

$$\begin{aligned} &\mathrm{function\_24}\left(\mathrm{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787},\right. \\ &\left.\left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right],\right. \\ &\left.\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right),\right. \\ &\left.\mathrm{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8}\right) \\ &= \frac{\mathrm{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787} \cdot \left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right]}{\mathrm{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8} + \left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right]} \\ &\qquad \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \end{aligned} \tag{162}$$

$$\begin{aligned} &\mathrm{function\_24}\left(\mathrm{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787},\right. \\ &\left.\left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right],\right. \\ &\left.\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right),\right. \\ &\left.\mathrm{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8}\right) \\ &= \frac{\mathrm{mw1667a8e0\_9d20\_4e59\_ba51\_596148aba787} \cdot \left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right]}{\mathrm{mwfcf06900\_5f2f\_4bb3\_bb1f\_12023612b8a8} + \left[\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d}\right]} \\ &\qquad \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \end{aligned} \tag{163}$$

10.25 Reaction `mw391f3b8e_5649_4851_b2e2_782cb3e015b6`

This is an irreversible reaction of no reactant forming one product.

Name mw391f3b8e_5649_4851_b2e2_782cb3e015b6

Reaction equation

$$\emptyset \longrightarrow \mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd} \tag{164}$$

Product

Table 66: Properties of each product.

Id	Name	SBO
`mw80848184_e2dd_47ce_86d7_7a21479342bd`	gp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{25} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \cdot \mathrm{function\_25}\left(\mathrm{kRsynth}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) \tag{165}$$

$$\mathrm{function\_25}\left(\mathrm{kRsynth}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) = \frac{\mathrm{kRsynth}}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{166}$$

$$\mathrm{function\_25}\left(\mathrm{kRsynth}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) = \frac{\mathrm{kRsynth}}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{167}$$

10.26 Reaction `mw4a00a3a4_778f_4952_8100_2dc3cc2b7046`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw4a00a3a4_778f_4952_8100_2dc3cc2b7046

Reaction equation

$$\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd} \xrightarrow{\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}} \emptyset \tag{168}$$

Reactant

Table 67: Properties of each reactant.

Id	Name	SBO
`mw80848184_e2dd_47ce_86d7_7a21479342bd`	gp130	

Modifier

Table 68: Properties of each modifier.

Id	Name	SBO
`mw80848184_e2dd_47ce_86d7_7a21479342bd`	gp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{26} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \cdot \mathrm{function\_26}\left(\mathrm{kRdeg}, [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) \tag{169}$$

$$\mathrm{function\_26}\left(\mathrm{kRdeg}, [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) = \frac{\mathrm{kRdeg} \cdot [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{170}$$

$$\mathrm{function\_26}\left(\mathrm{kRdeg}, [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) = \frac{\mathrm{kRdeg} \cdot [\mathrm{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd}]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{171}$$

10.27 Reaction mw6db30657_4e56_4c3a_8575_9c67393dde4f

This is an irreversible reaction of no reactant forming one product.

Name mw6db30657_4e56_4c3a_8575_9c67393dde4f

Reaction equation

$$\emptyset \longrightarrow \mathrm{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca} \tag{172}$$

Product

Table 69: Properties of each product.

Id	Name	SBO
mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca	gp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{27} = \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \cdot \mathrm{function\_27}\left(\mathrm{kRsynth}, \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) \tag{173}$$

$$\begin{aligned}&\text{function\_27}\left(\text{kRsynth}, \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\\ &= \frac{\text{kRsynth}}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned} \tag{174}$$

$$\begin{aligned}&\text{function\_27}\left(\text{kRsynth}, \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\\ &= \frac{\text{kRsynth}}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned} \tag{175}$$

10.28 Reaction `mw6f470e13_f0e4_4294_83d8_59dd5670d10c`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw6f470e13_f0e4_4294_83d8_59dd5670d10c

Reaction equation

$$\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca} \xrightarrow{\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}} \emptyset \tag{176}$$

Reactant

Table 70: Properties of each reactant.

Id	Name	SBO
`mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca`	gp130	

Modifier

Table 71: Properties of each modifier.

Id	Name	SBO
`mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca`	gp130	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned}v_{28} = &\ \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\\ &\cdot \text{function\_28}\left(\text{kRdeg}, [\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}],\right.\\ &\left.\qquad \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\end{aligned} \tag{177}$$

$$\begin{aligned}&\text{function\_28}\left(\text{kRdeg}, [\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}],\right.\\&\left.\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\\&\quad=\frac{\text{kRdeg}\cdot[\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned}\tag{178}$$

$$\begin{aligned}&\text{function\_28}\left(\text{kRdeg}, [\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}],\right.\\&\left.\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\\&\quad=\frac{\text{kRdeg}\cdot[\text{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca}]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned}\tag{179}$$

10.29 Reaction mwfb35eca9_7afc_4ba8_a46c_738cab57eb9f

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

Name mwfb35eca9_7afc_4ba8_a46c_738cab57eb9f

Reaction equation

$$\text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc} \xleftrightarrow{\text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc, mwd31f52cc\_04e7\_40}}\tag{180}$$

Reactant

Table 72: Properties of each reactant.

Id	Name	SBO
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	

Modifiers

Table 73: Properties of each modifier.

Id	Name	SBO
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	
mwd31f52cc_04e7_40e0_885f_c7b2d9e62215	sR	

Product

Table 74: Properties of each product.

Id	Name	SBO
mwd31f52cc_04e7_40e0_885f_c7b2d9e62215	sR	

Kinetic Law

Derived unit contains undeclared units

$$v_{29} = \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \cdot [\text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}] - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \cdot [\text{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215}] \tag{181}$$

10.30 Reaction mw61d2af92_6da5_41ce_b90e_aa6f430e6ba1

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

Name mw61d2af92_6da5_41ce_b90e_aa6f430e6ba1

Reaction equation

$$\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b} \xrightleftharpoons{\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b, mw2c9b0499\_3325\_439}} \tag{182}$$

Reactant

Table 75: Properties of each reactant.

Id	Name	SBO
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	

Modifiers

Table 76: Properties of each modifier.

Id	Name	SBO
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	

Product

Table 77: Properties of each product.

Id	Name	SBO
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{30} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}] \end{aligned} \tag{183}$$

10.31 Reaction mw4c099d5c_200f_474e_8ec1_59e9223a8afd

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

Name mw4c099d5c_200f_474e_8ec1_59e9223a8afd

Reaction equation

$$\text{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215} + \text{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0} \rightleftharpoons \text{mw2c9b0499\_3325\_} \tag{184}$$

Reactants

Table 78: Properties of each reactant.

Id	Name	SBO
mwd31f52cc_04e7_40e0_885f_c7b2d9e62215	sR	
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	

Modifiers

Table 79: Properties of each modifier.

Id	Name	SBO
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	

Id	Name	SBO
mw7becb5fe_8da8_4285_a821_0d77ad811b62	sR_IL6	
mwd31f52cc_04e7_40e0_885f_c7b2d9e62215	sR	

Product

Table 80: Properties of each product.

Id	Name	SBO
mw7becb5fe_8da8_4285_a821_0d77ad811b62	sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{31} = {} & \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}) \\ & \cdot \mathrm{function\_29}\,(\mathrm{kRLOff}, \mathrm{kRLOn}, [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & \qquad [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], \\ & \qquad [\mathrm{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215}], \\ & \qquad \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \end{aligned} \tag{185}$$

$$\begin{aligned} & \mathrm{function\_29}\,(\mathrm{kRLOff}, \mathrm{kRLOn}, [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], \\ & [\mathrm{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215}], \\ & \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \\ = {} & \frac{\mathrm{kRLOn} \cdot [\mathrm{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215}] \cdot [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}] - \mathrm{kRL}}{\mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \end{aligned} \tag{186}$$

$$\begin{aligned} & \mathrm{function\_29}\,(\mathrm{kRLOff}, \mathrm{kRLOn}, [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], \\ & [\mathrm{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215}], \\ & \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \\ = {} & \frac{\mathrm{kRLOn} \cdot [\mathrm{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215}] \cdot [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}] - \mathrm{kRL}}{\mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \end{aligned} \tag{187}$$

10.32 Reaction mwbe8567ce_3349_4442_8b12_53cd9bc168e7

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

Name mwbe8567ce_3349_4442_8b12_53cd9bc168e7

Reaction equation

$$\text{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d} \xrightleftharpoons{\text{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d, mw7becb5fe\_8da8\_428}} \tag{188}$$

Reactant

Table 81: Properties of each reactant.

Id	Name	SBO
mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	sR_IL6	

Modifiers

Table 82: Properties of each modifier.

Id	Name	SBO
mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	sR_IL6	
mw7becb5fe_8da8_4285_a821_0d77ad811b62	sR_IL6	

Product

Table 83: Properties of each product.

Id	Name	SBO
mw7becb5fe_8da8_4285_a821_0d77ad811b62	sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{32} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}] \end{aligned} \tag{189}$$

10.33 Reaction mw12a9fa7e_a273_4c1e_b970_ed33f3a9a705

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

Name mw12a9fa7e_a273_4c1e_b970_ed33f3a9a705

Reaction equation

$$\text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc} \rightleftharpoons \text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc, mw2e464cf3\_a09c\_4b} \tag{190}$$

Reactant

Table 84: Properties of each reactant.

Id	Name	SBO
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	

Modifiers

Table 85: Properties of each modifier.

Id	Name	SBO
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	
mw2e464cf3_a09c_4b7c_9f3c_06720016a48e	sR	

Product

Table 86: Properties of each product.

Id	Name	SBO
mw2e464cf3_a09c_4b7c_9f3c_06720016a48e	sR	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{33} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e}] \end{aligned} \tag{191}$$

10.34 Reaction mw1046000b_e1e8_4f6f_82a1_532d2aa793bb

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

Name mw1046000b_e1e8_4f6f_82a1_532d2aa793bb

Reaction equation

$$\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b} \xrightleftharpoons{\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b, mw0adf3eb4\_a196\_4c4}} \tag{192}$$

Reactant

Table 87: Properties of each reactant.

Id	Name	SBO
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	

Modifiers

Table 88: Properties of each modifier.

Id	Name	SBO
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	
mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1	IL6	

Product

Table 89: Properties of each product.

Id	Name	SBO
mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1	IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{34} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}] \end{aligned} \tag{193}$$

10.35 Reaction mw8e8b65a8_6830_4091_9a40_19645e8fe554

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

Name mw8e8b65a8_6830_4091_9a40_19645e8fe554

Reaction equation

$$\text{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d} \xrightleftharpoons{\text{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d, mw4638f126\_8cb8\_402}} \tag{194}$$

Reactant

Table 90: Properties of each reactant.

Id	Name	SBO
mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	sR_IL6	

Modifiers

Table 91: Properties of each modifier.

Id	Name	SBO
mw03db56ac_8dc6_4931_ae82_fef706d2ee3d	sR_IL6	
mw4638f126_8cb8_4021_ab41_6ae195743ba0	sR_IL6	

Product

Table 92: Properties of each product.

Id	Name	SBO
mw4638f126_8cb8_4021_ab41_6ae195743ba0	sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{35} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}] \end{aligned} \tag{195}$$

10.36 Reaction mwa812f08f_1035_42bd_82d2_72d691308f88

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

Name mwa812f08f_1035_42bd_82d2_72d691308f88

Reaction equation

$$\mathrm{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e} + \mathrm{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1} \xrightleftharpoons{\mathrm{mw0adf3eb4\_a196\_4c} \quad (196)$$

Reactants

Table 93: Properties of each reactant.

Id	Name	SBO
mw2e464cf3_a09c_4b7c_9f3c_06720016a48e	sR	
mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1	IL6	

Modifiers

Table 94: Properties of each modifier.

Id	Name	SBO
mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1	IL6	
mw2e464cf3_a09c_4b7c_9f3c_06720016a48e	sR	
mw4638f126_8cb8_4021_ab41_6ae195743ba0	sR_IL6	

Product

Table 95: Properties of each product.

Id	Name	SBO
mw4638f126_8cb8_4021_ab41_6ae195743ba0	sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{36} = {} & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \\ & \cdot \mathrm{function\_30}\left(\mathrm{kRLOff}, \mathrm{kRLOn}, [\mathrm{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}], \right. \\ & \qquad [\mathrm{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e}], \\ & \qquad [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}], \\ & \qquad \left.\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)\right) \end{aligned} \quad (197)$$

$$\text{function\_30}(\text{kRLOff}, \text{kRLOn}, [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}], \quad (198)$$
$$[\text{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e}],$$
$$[\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}],$$
$$\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}))$$
$$= \frac{\text{kRLOn} \cdot [\text{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e}] \cdot [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}] - \text{kRLO}}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})}$$

$$\text{function\_30}(\text{kRLOff}, \text{kRLOn}, [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}], \quad (199)$$
$$[\text{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e}],$$
$$[\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}],$$
$$\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}))$$
$$= \frac{\text{kRLOn} \cdot [\text{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e}] \cdot [\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}] - \text{kRLO}}{\text{vol}(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})}$$

10.37 Reaction `mwab0012ac_e5f2_4904_9893_820fd210402e`

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

Name mwab0012ac_e5f2_4904_9893_820fd210402e

Reaction equation

$$\text{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349} \xrightarrow{\text{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349}} \text{mw36ea78c1\_ed71\_4d} \quad (200)$$

Reactant

Table 96: Properties of each reactant.

Id	Name	SBO
`mwd5313618_89eb_4c8c_bc82_66f10f966349`	CRP	

Modifier

Table 97: Properties of each modifier.

Id	Name	SBO
`mwd5313618_89eb_4c8c_bc82_66f10f966349`	CRP	

Product

Table 98: Properties of each product.

Id	Name	SBO
mw36ea78c1_ed71_4def_96d3_857a442d7195	CRPExtracellular	

Kinetic Law

Derived unit contains undeclared units

$$v_{37} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \cdot \mathrm{function\_31}\left(\mathrm{mw862f1480\_c60c\_4863\_a565\_b2c1c77e238e}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), [\mathrm{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349}]\right) \tag{201}$$

$$\mathrm{function\_31}\left(\mathrm{mw862f1480\_c60c\_4863\_a565\_b2c1c77e238e}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), [\mathrm{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349}]\right) = \frac{\mathrm{mw862f1480\_c60c\_4863\_a565\_b2c1c77e238e} \cdot [\mathrm{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349}]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{202}$$

$$\mathrm{function\_31}\left(\mathrm{mw862f1480\_c60c\_4863\_a565\_b2c1c77e238e}, \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), [\mathrm{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349}]\right) = \frac{\mathrm{mw862f1480\_c60c\_4863\_a565\_b2c1c77e238e} \cdot [\mathrm{mwd5313618\_89eb\_4c8c\_bc82\_66f10f966349}]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{203}$$

10.38 Reaction mwcdc24bd4_d9e4_47fe_8300_d222d853111c

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

Name mwcdc24bd4_d9e4_47fe_8300_d222d853111c

Reaction equation

$$\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1} \rightleftharpoons \mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}, \mathrm{mw36ea78c1\_ed71\_4de} \tag{204}$$

Reactant

Table 99: Properties of each reactant.

Id	Name	SBO
mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	CRP	

Modifiers

Table 100: Properties of each modifier.

Id	Name	SBO
mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	CRP	
mw36ea78c1_ed71_4def_96d3_857a442d7195	CRPExtracellular	

Product

Table 101: Properties of each product.

Id	Name	SBO
mw36ea78c1_ed71_4def_96d3_857a442d7195	CRPExtracellular	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{38} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mw36ea78c1\_ed71\_4def\_96d3\_857a442d7195}] \end{aligned} \tag{205}$$

10.39 Reaction mwff2ebcf1_dcf1_47b9_9cac_7306fc6f7f76

This is an irreversible reaction of no reactant forming one product.

Name mwff2ebcf1_dcf1_47b9_9cac_7306fc6f7f76

Reaction equation

$$\emptyset \longrightarrow \text{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1} \tag{206}$$

Product

Table 102: Properties of each product.

Id	Name	SBO
mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	CRP	

Kinetic Law

Derived unit contains undeclared units

$$v_{39} = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_32}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mw65c85954\_5ca0\_4df2\_9e22\_ff2aa3fbe3f1}\right) \tag{207}$$

$$\mathrm{function\_32}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mw65c85954\_5ca0\_4df2\_9e22\_ff2aa3fbe3f1}\right) = \frac{\mathrm{mw65c85954\_5ca0\_4df2\_9e22\_ff2aa3fbe3f1}}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{208}$$

$$\mathrm{function\_32}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mw65c85954\_5ca0\_4df2\_9e22\_ff2aa3fbe3f1}\right) = \frac{\mathrm{mw65c85954\_5ca0\_4df2\_9e22\_ff2aa3fbe3f1}}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{209}$$

10.40 Reaction mw1c5a5ff7_5130_490f_a740_6a744ccf8a94

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

Name mw1c5a5ff7_5130_490f_a740_6a744ccf8a94

Reaction equation

$$\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99} \overleftrightarrow{\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99, mwd65b5b39\_dc1b\_4e}} \tag{210}$$

Reactant

Table 103: Properties of each reactant.

Id	Name	SBO
mwbbbce920_e8dd_4320_9386_fc94bfb2fc99	sgp130	

Modifiers

Table 104: Properties of each modifier.

Id	Name	SBO
mwbbbce920_e8dd_4320_9386_fc94bfb2fc99	sgp130	
mwd65b5b39_dc1b_4e77_a999_67277a880e5e	sgp130	

Product

Table 105: Properties of each product.

Id	Name	SBO
mwd65b5b39_dc1b_4e77_a999_67277a880e5e	sgp130	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{40} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e}] \end{aligned} \tag{211}$$

10.41 Reaction mw7b56053c_7256_4703_a8c3_4fd46b2c23d0

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

Name mw7b56053c_7256_4703_a8c3_4fd46b2c23d0

Reaction equation

$$\text{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99} \xrightleftharpoons{\text{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99, mw147d30ec\_478e\_40}} \tag{212}$$

Reactant

Table 106: Properties of each reactant.

Id	Name	SBO
mwbbbce920_e8dd_4320_9386_fc94bfb2fc99	sgp130	

Modifiers

Table 107: Properties of each modifier.

Id	Name	SBO
mwbbbce920_e8dd_4320_9386_fc94bfb2fc99	sgp130	
mw147d30ec_478e_4090_b496_128a131d29eb	sgp130	

Product

Table 108: Properties of each product.

Id	Name	SBO
mw147d30ec_478e_4090_b496_128a131d29eb	sgp130	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{41} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mw147d30ec\_478e\_4090\_b496\_128a131d29eb}] \end{aligned} \tag{213}$$

10.42 Reaction mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c

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

Name mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c

Reaction equation

$$\text{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e} + \text{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62} \rightleftharpoons \text{mw6335d5d7\_c7b0} \tag{214}$$

Reactants

Table 109: Properties of each reactant.

Id	Name	SBO
mwd65b5b39_dc1b_4e77_a999_67277a880e5e	sgp130	
mw7becb5fe_8da8_4285_a821_0d77ad811b62	sR_IL6	

Modifiers

Table 110: Properties of each modifier.

Id	Name	SBO
mw6335d5d7_c7b0_4bc0_b883_f7ee4915c2c3	sR_IL6_sgp130	
mw7becb5fe_8da8_4285_a821_0d77ad811b62	sR_IL6	
mwd65b5b39_dc1b_4e77_a999_67277a880e5e	sgp130	

Product

Table 111: Properties of each product.

Id	Name	SBO
mw6335d5d7_c7b0_4bc0_b883_f7ee4915c2c3	sR_IL6_sgp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{42} = \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}) \cdot \mathrm{function\_33}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw6335d5d7\_c7b0\_4bc0\_b883\_f7ee4915c2c3}], [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], [\mathrm{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e}], \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \quad (215)$$

$$\mathrm{function\_33}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw6335d5d7\_c7b0\_4bc0\_b883\_f7ee4915c2c3}], [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], [\mathrm{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e}], \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \quad (216)$$

$$= \frac{\mathrm{kgp130On} \cdot [\mathrm{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e}] \cdot [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}] - \mathrm{k}}{\mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})}$$

$$\mathrm{function\_33}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw6335d5d7\_c7b0\_4bc0\_b883\_f7ee4915c2c3}], [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}], [\mathrm{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e}], \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \quad (217)$$

$$= \frac{\mathrm{kgp130On} \cdot [\mathrm{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e}] \cdot [\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62}] - \mathrm{k}}{\mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})}$$

10.43 Reaction mwd77df15b_fed7_41a8_a3d6_b0f6c590c5f6

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

Name mwd77df15b_fed7_41a8_a3d6_b0f6c590c5f6

Reaction equation

$$\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0} + \text{mw147d30ec\_478e\_4090\_b496\_128a131d29eb} \overset{\text{mw147d30ec\_478e}}{\rightleftharpoons} \quad (218)$$

Reactants

Table 112: Properties of each reactant.

Id	Name	SBO
mw4638f126_8cb8_4021_ab41_6ae195743ba0	sR_IL6	
mw147d30ec_478e_4090_b496_128a131d29eb	sgp130	

Modifiers

Table 113: Properties of each modifier.

Id	Name	SBO
mw147d30ec_478e_4090_b496_128a131d29eb	sgp130	
mw4638f126_8cb8_4021_ab41_6ae195743ba0	sR_IL6	
mwab41493c_6349_45f1_a226_3030cfed0e06	sR_IL6_sgp130	

Product

Table 114: Properties of each product.

Id	Name	SBO
mwab41493c_6349_45f1_a226_3030cfed0e06	sR_IL6_sgp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{43} = \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}) \cdot \mathrm{function\_34}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw147d30ec\_478e\_4090\_b496\_128a131d29eb}], [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), [\mathrm{mwab41493c\_6349\_45f1\_a226\_3030cfed0e06}]) \tag{219}$$

$$\mathrm{function\_34}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw147d30ec\_478e\_4090\_b496\_128a131d29eb}], [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), [\mathrm{mwab41493c\_6349\_45f1\_a226\_3030cfed0e06}]) = \frac{\mathrm{kgp130On} \cdot [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}] \cdot [\mathrm{mw147d30ec\_478e\_4090\_b496\_128a131d29eb}] - 1}{\mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{220}$$

$$\mathrm{function\_34}\,(\mathrm{kgp130Off}, \mathrm{kgp130On}, [\mathrm{mw147d30ec\_478e\_4090\_b496\_128a131d29eb}], [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}], \mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}), [\mathrm{mwab41493c\_6349\_45f1\_a226\_3030cfed0e06}]) = \frac{\mathrm{kgp130On} \cdot [\mathrm{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0}] \cdot [\mathrm{mw147d30ec\_478e\_4090\_b496\_128a131d29eb}] - 1}{\mathrm{vol}\,(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e})} \tag{221}$$

10.44 Reaction `mw01babcdf_0f03_46b0_81b1_201cc846e361`

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

Name mw01babcdf_0f03_46b0_81b1_201cc846e361

Reaction equation

$$\mathrm{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e} \xrightleftharpoons{\mathrm{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e,\ mw6335d5d7\_c7b0\_4b} \quad} \tag{222}$$

Reactant

Table 115: Properties of each reactant.

Id	Name	SBO
`mw810ff751_fa4e_4143_bd50_169b3e325e1e`	sR_IL6_sgp130	

Modifiers

Table 116: Properties of each modifier.

Id	Name	SBO
mw810ff751_fa4e_4143_bd50_169b3e325e1e	sR_IL6_sgp130	
mw6335d5d7_c7b0_4bc0_b883_f7ee4915c2c3	sR_IL6_sgp130	

Product

Table 117: Properties of each product.

Id	Name	SBO
mw6335d5d7_c7b0_4bc0_b883_f7ee4915c2c3	sR_IL6_sgp130	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{44} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mw6335d5d7\_c7b0\_4bc0\_b883\_f7ee4915c2c3}] \end{aligned} \tag{223}$$

10.45 Reaction mwae5dbb44_7de5_46ab_8c20_ac4f8956b0f0

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

Name mwae5dbb44_7de5_46ab_8c20_ac4f8956b0f0

Reaction equation

$$\text{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e} \xrightleftharpoons{\text{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e, mwab41493c\_6349\_45f}} \tag{224}$$

Reactant

Table 118: Properties of each reactant.

Id	Name	SBO
mw810ff751_fa4e_4143_bd50_169b3e325e1e	sR_IL6_sgp130	

Modifiers

Table 119: Properties of each modifier.

Id	Name	SBO
mw810ff751_fa4e_4143_bd50_169b3e325e1e	sR_IL6_sgp130	
mwab41493c_6349_45f1_a226_3030cfed0e06	sR_IL6_sgp130	

Product

Table 120: Properties of each product.

Id	Name	SBO
mwab41493c_6349_45f1_a226_3030cfed0e06	sR_IL6_sgp130	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{45} = {} & \text{mwc67e1333\_079a\_4bea\_9b4f\_0a1b15ddd7bb} \\ & \cdot [\text{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e}] \\ & - \text{mwce10678d\_8197\_408c\_ad47\_1daec8104cd8} \\ & \cdot [\text{mwab41493c\_6349\_45f1\_a226\_3030cfed0e06}] \end{aligned} \tag{225}$$

10.46 Reaction mw432fde6e_59ab_47f0_9fb1_086433a602e3

This is an irreversible reaction of no reactant forming one product.

Name mw432fde6e_59ab_47f0_9fb1_086433a602e3

Reaction equation

$$\emptyset \longrightarrow \text{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc} \tag{226}$$

Product

Table 121: Properties of each product.

Id	Name	SBO
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	

Kinetic Law

Derived unit contains undeclared units

$$v_{46} = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_35}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mwc4c58db7\_5535\_4590\_aaa5\_bbc8ed53cdab}\right) \tag{227}$$

$$\mathrm{function\_35}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mwc4c58db7\_5535\_4590\_aaa5\_bbc8ed53cdab}\right) = \frac{\mathrm{mwc4c58db7\_5535\_4590\_aaa5\_bbc8ed53cdab}}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{228}$$

$$\mathrm{function\_35}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mwc4c58db7\_5535\_4590\_aaa5\_bbc8ed53cdab}\right) = \frac{\mathrm{mwc4c58db7\_5535\_4590\_aaa5\_bbc8ed53cdab}}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{229}$$

10.47 Reaction `mw41c27823_d7ee_4554_9eac_3d5beec8e854`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw41c27823_d7ee_4554_9eac_3d5beec8e854

Reaction equation

$$\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc} \xrightarrow{\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}} \emptyset \tag{230}$$

Reactant

Table 122: Properties of each reactant.

Id	Name	SBO
`mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc`	sR	

Modifier

Table 123: Properties of each modifier.

Id	Name	SBO
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	

Kinetic Law

Derived unit contains undeclared units

$$v_{47} = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_36}\left(\left[\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}\right], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mw88a75379\_f9a1\_4acc\_baeb\_94c32bb736a5}\right) \tag{231}$$

$$\mathrm{function\_36}\left(\left[\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}\right], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mw88a75379\_f9a1\_4acc\_baeb\_94c32bb736a5}\right) = \frac{\mathrm{mw88a75379\_f9a1\_4acc\_baeb\_94c32bb736a5} \cdot \left[\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}\right]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{232}$$

$$\mathrm{function\_36}\left(\left[\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}\right], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mw88a75379\_f9a1\_4acc\_baeb\_94c32bb736a5}\right) = \frac{\mathrm{mw88a75379\_f9a1\_4acc\_baeb\_94c32bb736a5} \cdot \left[\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc}\right]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{233}$$

10.48 Reaction mw50c6744c_e883_4612_8663_e38750cbad1b

This is an irreversible reaction of no reactant forming one product.

Name mw50c6744c_e883_4612_8663_e38750cbad1b

Reaction equation

$$\emptyset \longrightarrow \mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99} \tag{234}$$

Product

Table 124: Properties of each product.

Id	Name	SBO
mwbbbce920_e8dd_4320_9386_fc94bfb2fc99	sgp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{48} = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_37}\left(\mathrm{mw1f41474c\_c399\_4a60\_a53a\_9926dd092e8d}, \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) \tag{235}$$

$$\mathrm{function\_37}\left(\mathrm{mw1f41474c\_c399\_4a60\_a53a\_9926dd092e8d}, \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) = \frac{\mathrm{mw1f41474c\_c399\_4a60\_a53a\_9926dd092e8d}}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{236}$$

$$\mathrm{function\_37}\left(\mathrm{mw1f41474c\_c399\_4a60\_a53a\_9926dd092e8d}, \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)\right) = \frac{\mathrm{mw1f41474c\_c399\_4a60\_a53a\_9926dd092e8d}}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{237}$$

10.49 Reaction `mwb6a99eb5_ea4c_4733_98dd_1daf5ec6b0db`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mwb6a99eb5_ea4c_4733_98dd_1daf5ec6b0db

Reaction equation

$$\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99} \xrightarrow{\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}} \emptyset \tag{238}$$

Reactant

Table 125: Properties of each reactant.

Id	Name	SBO
`mwbbbce920_e8dd_4320_9386_fc94bfb2fc99`	sgp130	

Modifier

Table 126: Properties of each modifier.

Id	Name	SBO
mwbbbce920_e8dd_4320_9386_fc94bfb2fc99	sgp130	

Kinetic Law

Derived unit contains undeclared units

$$v_{49} = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_38}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}], \mathrm{mwbcb5a310\_9b67\_405e\_89ec\_43d25e8cc93d}\right) \tag{239}$$

$$\mathrm{function\_38}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}], \mathrm{mwbcb5a310\_9b67\_405e\_89ec\_43d25e8cc93d}\right) = \frac{\mathrm{mwbcb5a310\_9b67\_405e\_89ec\_43d25e8cc93d} \cdot [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{240}$$

$$\mathrm{function\_38}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}], \mathrm{mwbcb5a310\_9b67\_405e\_89ec\_43d25e8cc93d}\right) = \frac{\mathrm{mwbcb5a310\_9b67\_405e\_89ec\_43d25e8cc93d} \cdot [\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99}]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{241}$$

10.50 Reaction mw1ce0c484_681f_4d85_8ffe_392d0c100cfa

This is an irreversible reaction of no reactant forming one product.

Name mw1ce0c484_681f_4d85_8ffe_392d0c100cfa

Reaction equation

$$\emptyset \longrightarrow \mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0} \tag{242}$$

Product

Table 127: Properties of each product.

Id	Name	SBO
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	

Kinetic Law

Derived unit contains undeclared units

$$v_{50} = \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \cdot \mathrm{function\_39}\left(\mathrm{mwa8d72918\_f6c2\_4d81\_bf3b\_fc2b464d5e69}, \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) \tag{243}$$

$$\mathrm{function\_39}\left(\mathrm{mwa8d72918\_f6c2\_4d81\_bf3b\_fc2b464d5e69}, \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) = \frac{\mathrm{mwa8d72918\_f6c2\_4d81\_bf3b\_fc2b464d5e69}}{\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{244}$$

$$\mathrm{function\_39}\left(\mathrm{mwa8d72918\_f6c2\_4d81\_bf3b\_fc2b464d5e69}, \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) = \frac{\mathrm{mwa8d72918\_f6c2\_4d81\_bf3b\_fc2b464d5e69}}{\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{245}$$

10.51 Reaction `mwf913ea0b_785a_4701_ac91_b18ab5dd5a89`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mwf913ea0b_785a_4701_ac91_b18ab5dd5a89

Reaction equation

$$\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0} \xrightarrow{\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}} \emptyset \tag{246}$$

Reactant

Table 128: Properties of each reactant.

Id	Name	SBO
`mw2c9b0499_3325_4394_8af3_bbf653a944a0`	IL6	

Modifier

Table 129: Properties of each modifier.

Id	Name	SBO
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{51} = {} & \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}) \\ & \cdot \mathrm{function\_40}\,(\mathrm{mw06241335\_b5f2\_47ed\_bdcc\_ef77b68a2b98}, \\ & \qquad [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & \qquad \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \end{aligned} \tag{247}$$

$$\begin{aligned} & \mathrm{function\_40}\,(\mathrm{mw06241335\_b5f2\_47ed\_bdcc\_ef77b68a2b98}, \\ & [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \\ = {} & \frac{\mathrm{mw06241335\_b5f2\_47ed\_bdcc\_ef77b68a2b98} \cdot [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}]}{\mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \end{aligned} \tag{248}$$

$$\begin{aligned} & \mathrm{function\_40}\,(\mathrm{mw06241335\_b5f2\_47ed\_bdcc\_ef77b68a2b98}, \\ & [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & \mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})) \\ = {} & \frac{\mathrm{mw06241335\_b5f2\_47ed\_bdcc\_ef77b68a2b98} \cdot [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}]}{\mathrm{vol}\,(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5})} \end{aligned} \tag{249}$$

10.52 Reaction mw71d90b81_8211_4039_8807_12a7fe03206c

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

Name mw71d90b81_8211_4039_8807_12a7fe03206c

Reaction equation

$$\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1} \xrightarrow{\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}} \mathrm{mw30ae63db\_6cd3\_4b6} \tag{250}$$

Reactant

Table 130: Properties of each reactant.

Id	Name	SBO
mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	CRP	

Modifier

Table 131: Properties of each modifier.

Id	Name	SBO
mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	CRP	

Products

Table 132: Properties of each product.

Id	Name	SBO
mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc	sR	
mw114aa90f_5f5b_4fe8_9406_361c8489b6a1	CRP	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{52} = {} & \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \\ & \cdot \mathrm{function\_41}\left(\left[\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}\right],\right. \\ & \qquad \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \\ & \qquad \left.\mathrm{mw5832a2dc\_ee18\_44df\_aa59\_ccb21cb74df2}\right) \end{aligned} \tag{251}$$

$$\begin{aligned} & \mathrm{function\_41}\left(\left[\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}\right],\right. \\ & \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \\ & \left.\mathrm{mw5832a2dc\_ee18\_44df\_aa59\_ccb21cb74df2}\right) \\ = {} & \frac{\mathrm{mw5832a2dc\_ee18\_44df\_aa59\_ccb21cb74df2} \cdot \left[\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}\right]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \end{aligned} \tag{252}$$

$$\begin{aligned} & \mathrm{function\_41}\left(\left[\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}\right],\right. \\ & \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \\ & \left.\mathrm{mw5832a2dc\_ee18\_44df\_aa59\_ccb21cb74df2}\right) \\ = {} & \frac{\mathrm{mw5832a2dc\_ee18\_44df\_aa59\_ccb21cb74df2} \cdot \left[\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1}\right]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \end{aligned} \tag{253}$$

10.53 Reaction mwdf4ba845_7271_4ada_b43f_fdac83df3b5c

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

Name mwdf4ba845_7271_4ada_b43f_fdac83df3b5c

Reaction equation

$$\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded} \xrightleftharpoons{\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded, mwbc2f5464\_81e5\_43}} \tag{254}$$

Reactant

Table 133: Properties of each reactant.

Id	Name	SBO
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	

Modifiers

Table 134: Properties of each modifier.

Id	Name	SBO
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	
mwbc2f5464_81e5_43fd_8b39_f5a2756af72f	Ab	

Product

Table 135: Properties of each product.

Id	Name	SBO
mwbc2f5464_81e5_43fd_8b39_f5a2756af72f	Ab	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{53} = {} & \text{mwf67caf9d\_2f4b\_4986\_abf2\_e6090bbb72ce} \\ & \cdot [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}] \\ & - \text{mw4aea26f6\_8860\_414c\_97f5\_40d325196f2e} \\ & \cdot [\text{mwbc2f5464\_81e5\_43fd\_8b39\_f5a2756af72f}] \end{aligned} \tag{255}$$

10.54 Reaction mwb1879013_5fcd_490c_8b01_eaf84df15b9a

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

Name mwb1879013_5fcd_490c_8b01_eaf84df15b9a

Reaction equation

$$\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b} + \text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded} \underset{(256)}{\overset{\text{mw1da111f2\_a036\_4}}{\rightleftharpoons}}$$

Reactants

Table 136: Properties of each reactant.

Id	Name	SBO
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	

Modifiers

Table 137: Properties of each modifier.

Id	Name	SBO
mw1da111f2_a036_4392_8512_015005bdcbb7	Ab_IL6	
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	
mwf626e95e_543f_41e4_aad4_c6bf60ab345b	IL6	

Product

Table 138: Properties of each product.

Id	Name	SBO
mw1da111f2_a036_4392_8512_015005bdcbb7	Ab_IL6	

Kinetic Law

Derived unit contains undeclared units

$$
\begin{aligned}
v_{54} = \operatorname{vol}(&\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}) \\
&\cdot \text{function\_42}(\text{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead}, \\
&\qquad [\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}], \\
&\qquad \operatorname{vol}(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}), \\
&\qquad \text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197}, \\
&\qquad [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}], \\
&\qquad [\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}])
\end{aligned} \tag{257}
$$

$$
\begin{aligned}
&\text{function\_42}(\text{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead}, \\
&[\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}], \\
&\operatorname{vol}(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}), \\
&\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197}, \\
&[\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}], \\
&[\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]) \\
&= \frac{\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}] \cdot [\text{mwf345ed7a\_06}}{\operatorname{vol}(\text{mw53ffe9e6\_}}
\end{aligned} \tag{258}
$$

$$
\begin{aligned}
&\text{function\_42}(\text{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead}, \\
&[\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}], \\
&\operatorname{vol}(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}), \\
&\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197}, \\
&[\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}], \\
&[\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}]) \\
&= \frac{\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\text{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b}] \cdot [\text{mwf345ed7a\_06}}{\operatorname{vol}(\text{mw53ffe9e6\_}}
\end{aligned} \tag{259}
$$

10.55 Reaction mw30abb016_4300_4f40_a1b3_f865d0a45707

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw30abb016_4300_4f40_a1b3_f865d0a45707

Reaction equation

$$
\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7} \xrightarrow{\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}} \emptyset \tag{260}
$$

Reactant

Table 139: Properties of each reactant.

Id	Name	SBO
mw1da111f2_a036_4392_8512_015005bdcbb7	Ab_IL6	

Modifier

Table 140: Properties of each modifier.

Id	Name	SBO
mw1da111f2_a036_4392_8512_015005bdcbb7	Ab_IL6	

Kinetic Law

Derived unit contains undeclared units

$$v_{55} = \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \cdot \mathrm{function\_43}\left(\left[\mathrm{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}\right], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) \tag{261}$$

$$\mathrm{function\_43}\left(\left[\mathrm{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}\right], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) = \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\mathrm{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}\right]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{262}$$

$$\mathrm{function\_43}\left(\left[\mathrm{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}\right], \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) = \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\mathrm{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}\right]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \tag{263}$$

10.56 Reaction mw14d351b9_623a_48e8_a21c_854411039120

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw14d351b9_623a_48e8_a21c_854411039120

Reaction equation

$$\mathrm{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d} \xrightarrow{\mathrm{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}} \emptyset \tag{264}$$

Reactant

Table 141: Properties of each reactant.

Id	Name	SBO
mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	Ab_sR_IL6	

Modifier

Table 142: Properties of each modifier.

Id	Name	SBO
mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	Ab_sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{56} = {} & \mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \\ & \cdot \mathrm{function\_44}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \right. \\ & \qquad [\mathrm{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}], \\ & \qquad \left. \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) \end{aligned} \tag{265}$$

$$\begin{aligned} & \mathrm{function\_44}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \right. \\ & [\mathrm{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}], \\ & \left. \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) \\ = {} & \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\mathrm{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \end{aligned} \tag{266}$$

$$\begin{aligned} & \mathrm{function\_44}\left(\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \right. \\ & [\mathrm{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}], \\ & \left. \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) \\ = {} & \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\mathrm{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}]}{\mathrm{vol}\left(\mathrm{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \end{aligned} \tag{267}$$

10.57 Reaction mwba7f4605_8571_439b_b3ab_eb0b43808db8

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mwba7f4605_8571_439b_b3ab_eb0b43808db8

Reaction equation

$$\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded} \xrightarrow{\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}} \emptyset \tag{268}$$

Reactant

Table 143: Properties of each reactant.

Id	Name	SBO
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	

Modifier

Table 144: Properties of each modifier.

Id	Name	SBO
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{57} = {} & \text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right) \\ & \cdot \text{function\_45}\left(\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \right. \\ & \qquad \text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}, \\ & \qquad \left. [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}]\right) \end{aligned} \tag{269}$$

$$\begin{aligned} & \text{function\_45}\left(\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \right. \\ & \text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}, \\ & \left. [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}]\right) \\ = {} & \frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}]}{\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \end{aligned} \tag{270}$$

$$\begin{aligned} & \text{function\_45}\left(\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right), \right. \\ & \text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}, \\ & \left. [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}]\right) \\ = {} & \frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}]}{\text{vol}\left(\text{mw53ffe9e6\_beef\_45c4\_90a5\_a79197ed506e}\right)} \end{aligned} \tag{271}$$

10.58 Reaction mw5be6711a_526a_4a58_80c6_d353dcabdf87

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw5be6711a_526a_4a58_80c6_d353dcabdf87

Reaction equation

$$\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296} \xrightarrow{\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296}} \emptyset \tag{272}$$

Reactant

Table 145: Properties of each reactant.

Id	Name	SBO
mw2f3d48e0_c9c4_4a0e_aca3_9241eb573296	Ab_sR_IL6	

Modifier

Table 146: Properties of each modifier.

Id	Name	SBO
mw2f3d48e0_c9c4_4a0e_aca3_9241eb573296	Ab_sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{58} = {} & \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \\ & \cdot \text{function\_46}\left(\left[\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296}\right],\right. \\ & \qquad \text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}, \\ & \qquad \left.\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) \end{aligned} \tag{273}$$

$$\begin{aligned} & \text{function\_46}\left(\left[\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296}\right],\right. \\ & \text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}, \\ & \left.\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) \\ = {} & \frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296}\right]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \end{aligned} \tag{274}$$

$$\begin{aligned}&\text{function\_46}\left([\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296}],\right.\\&\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30},\\&\left.\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\\&=\frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\cdot[\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296}]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)}\end{aligned}\tag{275}$$

10.59 Reaction mw8b4e96ed_0bcc_4ad6_b560_366e173a6e6b

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw8b4e96ed_0bcc_4ad6_b560_366e173a6e6b

Reaction equation

$$\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}\xrightarrow{\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}}\emptyset\tag{276}$$

Reactant

Table 147: Properties of each reactant.

Id	Name	SBO
mw5d764bb8_5693_4ac8_9557_f65992cc5eb0	Ab_IL6	

Modifier

Table 148: Properties of each modifier.

Id	Name	SBO
mw5d764bb8_5693_4ac8_9557_f65992cc5eb0	Ab_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned}v_{59}=&\ \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\\&\cdot\text{function\_47}\left([\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}],\right.\\&\qquad\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30},\\&\qquad\left.\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right)\end{aligned}\tag{277}$$

$$\text{function\_47}\left([\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}],\ \text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30},\ \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) = \frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{278}$$

$$\text{function\_47}\left([\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}],\ \text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30},\ \text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)\right) = \frac{\text{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}]}{\text{vol}\left(\text{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \tag{279}$$

10.60 Reaction mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1

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

Name mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1

Reaction equation

$$\text{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c} + \text{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0} \rightleftharpoons \text{mw2c9b0499\_3325\_4} \tag{280}$$

Reactants

Table 149: Properties of each reactant.

Id	Name	SBO
mwf7796221_1fea_4274_a93e_c00adbf5778c	Ab	
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	

Modifiers

Table 150: Properties of each modifier.

Id	Name	SBO
mw2c9b0499_3325_4394_8af3_bbf653a944a0	IL6	
mw5d764bb8_5693_4ac8_9557_f65992cc5eb0	Ab_IL6	
mwf7796221_1fea_4274_a93e_c00adbf5778c	Ab	

Product

Table 151: Properties of each product.

Id	Name	SBO
mw5d764bb8_5693_4ac8_9557_f65992cc5eb0	Ab_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{60} = {} & \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \\ & \cdot \mathrm{function\_48}\left(\mathrm{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead},\right. \\ & \qquad [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & \qquad [\mathrm{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}], \\ & \qquad \mathrm{mwa09d6284\_843e\_404e\_abbb\_052fbb535197}, \\ & \qquad \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \\ & \qquad \left.[\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}]\right) \end{aligned} \tag{281}$$

$$\begin{aligned} & \mathrm{function\_48}\left(\mathrm{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead},\right. \\ & [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & [\mathrm{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}], \\ & \mathrm{mwa09d6284\_843e\_404e\_abbb\_052fbb535197}, \\ & \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \\ & \left.[\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}]\right) \\ = {} & \frac{\mathrm{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}] \cdot [\mathrm{mw2c9b0499\_3}}{\mathrm{vol}\left(\mathrm{mwe9501423}\right.} \end{aligned} \tag{282}$$

$$\begin{aligned} & \mathrm{function\_48}\left(\mathrm{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead},\right. \\ & [\mathrm{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0}], \\ & [\mathrm{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}], \\ & \mathrm{mwa09d6284\_843e\_404e\_abbb\_052fbb535197}, \\ & \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \\ & \left.[\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}]\right) \\ = {} & \frac{\mathrm{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}] \cdot [\mathrm{mw2c9b0499\_3}}{\mathrm{vol}\left(\mathrm{mwe9501423}\right.} \end{aligned} \tag{283}$$

10.61 Reaction mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1

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

Name mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1

Reaction equation

$$\mathrm{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d} + \mathrm{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1} \xrightleftharpoons{\mathrm{mw0adf3eb4\_a196\_4c} \quad (284)}$$

Reactants

Table 152: Properties of each reactant.

Id	Name	SBO
mw3667a5e1_02c9_44a0_acb4_b0431faa822d	Ab	
mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1	IL6	

Modifiers

Table 153: Properties of each modifier.

Id	Name	SBO
mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1	IL6	
mw3667a5e1_02c9_44a0_acb4_b0431faa822d	Ab	
mwf405687b_7401_44ec_a0d6_4a2b35c13e8a	Ab_IL6	

Product

Table 154: Properties of each product.

Id	Name	SBO
mwf405687b_7401_44ec_a0d6_4a2b35c13e8a	Ab_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{61} = {} & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \\ & \cdot \mathrm{function\_49}\left(\left[\mathrm{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}\right],\right. \\ & \qquad \mathrm{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead}, \\ & \qquad \left[\mathrm{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}\right], \\ & \qquad \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \qquad \mathrm{mwa09d6284\_843e\_404e\_abbb\_052fbb535197}, \\ & \qquad \left.\left[\mathrm{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}\right]\right) \end{aligned} \tag{285}$$

$$\begin{aligned}&\text{function\_49}\left([\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}],\right. \\ &\text{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead},\\ &[\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}],\\ &\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right),\\ &\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197},\\ &\left.[\text{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}]\right)\\ &= \frac{\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}] \cdot [\text{mw0adf3eb4\_a}}{\text{vol}\left(\text{mw88ca8d9a}\right.}\end{aligned} \tag{286}$$

$$\begin{aligned}&\text{function\_49}\left([\text{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1}],\right. \\ &\text{mw1c4bc9c3\_52ad\_4ef7\_bf7f\_97b0e2101ead},\\ &[\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}],\\ &\text{vol}\left(\text{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right),\\ &\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197},\\ &\left.[\text{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}]\right)\\ &= \frac{\text{mwa09d6284\_843e\_404e\_abbb\_052fbb535197} \cdot [\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}] \cdot [\text{mw0adf3eb4\_a}}{\text{vol}\left(\text{mw88ca8d9a}\right.}\end{aligned} \tag{287}$$

10.62 Reaction mw3e76b10b_5420_4828_8c70_b91b767132d0

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw3e76b10b_5420_4828_8c70_b91b767132d0

Reaction equation

$$\text{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a} \xrightarrow{\text{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}} \emptyset \tag{288}$$

Reactant

Table 155: Properties of each reactant.

Id	Name	SBO
mwf405687b_7401_44ec_a0d6_4a2b35c13e8a	Ab_IL6	

Modifier

Table 156: Properties of each modifier.

Id	Name	SBO
mwf405687b_7401_44ec_a0d6_4a2b35c13e8a	Ab_IL6	

Id	Name	SBO

Kinetic Law

Derived unit contains undeclared units

$$v_{62} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \cdot \mathrm{function\_50}\left(\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}, [\mathrm{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}]\right) \tag{289}$$

$$\mathrm{function\_50}\left(\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}, [\mathrm{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}]\right) = \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\mathrm{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{290}$$

$$\mathrm{function\_50}\left(\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}, [\mathrm{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}]\right) = \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot [\mathrm{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{291}$$

10.63 Reaction `mw5d9fcd0c_ca08_4444_b509_2ea4777e0025`

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw5d9fcd0c_ca08_4444_b509_2ea4777e0025

Reaction equation

$$\mathrm{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a} \xrightarrow{\mathrm{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a}} \emptyset \tag{292}$$

Reactant

Table 157: Properties of each reactant.

Id	Name	SBO
`mw1d9426a3_e1e9_49e0_ad77_eb6833be398a`	Ab_sR_IL6	

Modifier

Table 158: Properties of each modifier.

Id	Name	SBO
mw1d9426a3_e1e9_49e0_ad77_eb6833be398a	Ab_sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$v_{63} = \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \cdot \mathrm{function\_51}\left(\left[\mathrm{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a}\right], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) \tag{293}$$

$$\mathrm{function\_51}\left(\left[\mathrm{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a}\right], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) = \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\mathrm{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a}\right]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{294}$$

$$\mathrm{function\_51}\left(\left[\mathrm{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a}\right], \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) = \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\mathrm{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a}\right]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \tag{295}$$

10.64 Reaction mw131e3c9d_e77d_48c0_bdbb_77b2c10aaf3d

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

Name mw131e3c9d_e77d_48c0_bdbb_77b2c10aaf3d

Reaction equation

$$\mathrm{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded} \rightleftharpoons \mathrm{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded,\ mw3667a5e1\_02c9\_4} \tag{296}$$

Reactant

Table 159: Properties of each reactant.

Id	Name	SBO
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	

Modifiers

Table 160: Properties of each modifier.

Id	Name	SBO
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	
mw3667a5e1_02c9_44a0_acb4_b0431faa822d	Ab	

Product

Table 161: Properties of each product.

Id	Name	SBO
mw3667a5e1_02c9_44a0_acb4_b0431faa822d	Ab	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{64} = {} & \text{mw640ca705\_e089\_4c64\_a5f4\_9562317e8c76} \\ & \cdot [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}] \\ & - \text{mw43ccad8c\_cabf\_4eaf\_90d5\_e06ae43be2cb} \\ & \cdot [\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}] \end{aligned} \tag{297}$$

10.65 Reaction mw14940d1f_6a1f_47cb_8170_801ba645f4c1

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

Name mw14940d1f_6a1f_47cb_8170_801ba645f4c1

Reaction equation

$$\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded} \rightleftharpoons \text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded, mwf7796221\_1fea\_42} \tag{298}$$

Reactant

Table 162: Properties of each reactant.

Id	Name	SBO
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	

Modifiers

Table 163: Properties of each modifier.

Id	Name	SBO
mwf345ed7a_0622_403c_b816_c8749a2c9ded	Ab	
mwf7796221_1fea_4274_a93e_c00adbf5778c	Ab	

Product

Table 164: Properties of each product.

Id	Name	SBO
mwf7796221_1fea_4274_a93e_c00adbf5778c	Ab	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{65} = {} & \text{mw9f83bdd3\_3aa1\_47ff\_abd6\_54e5ce60704a} \\ & \cdot [\text{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded}] \\ & - \text{mwa071fdbe\_d498\_4620\_a7a4\_940aa31c8161} \\ & \cdot [\text{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}] \end{aligned} \tag{299}$$

10.66 Reaction mwa2f4d966_ae2c_4ed2_b522_12755f12ff15

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

Name mwa2f4d966_ae2c_4ed2_b522_12755f12ff15

Reaction equation

$$\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7} \xrightleftharpoons{\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7, mwf405687b\_7401\_4}} \tag{300}$$

Reactant

Table 165: Properties of each reactant.

Id	Name	SBO
mw1da111f2_a036_4392_8512_015005bdcbb7	Ab_IL6	

Modifiers

Table 166: Properties of each modifier.

Id	Name	SBO
mw1da111f2_a036_4392_8512_015005bdcbb7	Ab_IL6	
mwf405687b_7401_44ec_a0d6_4a2b35c13e8a	Ab_IL6	

Product

Table 167: Properties of each product.

Id	Name	SBO
mwf405687b_7401_44ec_a0d6_4a2b35c13e8a	Ab_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{66} = {} & \text{mw640ca705\_e089\_4c64\_a5f4\_9562317e8c76} \\ & \cdot [\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}] \\ & - \text{mw43ccad8c\_cabf\_4eaf\_90d5\_e06ae43be2cb} \\ & \cdot [\text{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a}] \end{aligned} \tag{301}$$

10.67 Reaction mwb62106e7_e959_4a1d_9a00_b36d4e19a48f

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

Name mwb62106e7_e959_4a1d_9a00_b36d4e19a48f

Reaction equation

$$\text{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d} \xrightleftharpoons{\text{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d, mw1d9426a3\_e1e9\_4}} \tag{302}$$

Reactant

Table 168: Properties of each reactant.

Id	Name	SBO
mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	Ab_sR_IL6	

Modifiers

Table 169: Properties of each modifier.

Id	Name	SBO
mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	Ab_sR_IL6	
mw1d9426a3_e1e9_49e0_ad77_eb6833be398a	Ab_sR_IL6	

Product

Table 170: Properties of each product.

Id	Name	SBO
mw1d9426a3_e1e9_49e0_ad77_eb6833be398a	Ab_sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{67} = {} & \text{mw640ca705\_e089\_4c64\_a5f4\_9562317e8c76} \\ & \cdot [\text{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}] \\ & - \text{mw43ccad8c\_cabf\_4eaf\_90d5\_e06ae43be2cb} \\ & \cdot [\text{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a}] \end{aligned} \tag{303}$$

10.68 Reaction mw700e677e_d3b6_4a97_991f_279605a9abeb

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

Name mw700e677e_d3b6_4a97_991f_279605a9abeb

Reaction equation

$$\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7} \xrightleftharpoons{\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7, mw5d764bb8\_5693\_}} \tag{304}$$

Reactant

Table 171: Properties of each reactant.

Id	Name	SBO
mw1da111f2_a036_4392_8512_015005bdcbb7	Ab_IL6	

Modifiers

Table 172: Properties of each modifier.

Id	Name	SBO
mw1da111f2_a036_4392_8512_015005bdcbb7	Ab_IL6	
mw5d764bb8_5693_4ac8_9557_f65992cc5eb0	Ab_IL6	

Product

Table 173: Properties of each product.

Id	Name	SBO
mw5d764bb8_5693_4ac8_9557_f65992cc5eb0	Ab_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{68} = {} & \text{mw9f83bdd3\_3aa1\_47ff\_abd6\_54e5ce60704a} \\ & \cdot [\text{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7}] \\ & - \text{mwa071fdbe\_d498\_4620\_a7a4\_940aa31c8161} \\ & \cdot [\text{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0}] \end{aligned} \tag{305}$$

10.69 Reaction mwad648b6c_45ca_4f41_9747_06db1f6060fc

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

Name mwad648b6c_45ca_4f41_9747_06db1f6060fc

Reaction equation

$$\text{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d} \xrightleftharpoons{\text{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d, mw2f3d48e0\_c9c4\_4}} \tag{306}$$

Reactant

Table 174: Properties of each reactant.

Id	Name	SBO
mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	Ab_sR_IL6	

Modifiers

Table 175: Properties of each modifier.

Id	Name	SBO
mwa2d8dd1c_bb9a_4552_8738_e24671651c1d	Ab_sR_IL6	
mw2f3d48e0_c9c4_4a0e_aca3_9241eb573296	Ab_sR_IL6	

Product

Table 176: Properties of each product.

Id	Name	SBO
mw2f3d48e0_c9c4_4a0e_aca3_9241eb573296	Ab_sR_IL6	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{69} = {} & \text{mw9f83bdd3\_3aa1\_47ff\_abd6\_54e5ce60704a} \\ & \cdot [\text{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d}] \\ & - \text{mwa071fdbe\_d498\_4620\_a7a4\_940aa31c8161} \\ & \cdot [\text{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296}] \end{aligned} \tag{307}$$

10.70 Reaction mw2ae288ab_7d03_4a84_a024_c711ad2b77e6

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw2ae288ab_7d03_4a84_a024_c711ad2b77e6

Reaction equation

$$\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d} \xrightarrow{\text{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}} \emptyset \tag{308}$$

Reactant

Table 177: Properties of each reactant.

Id	Name	SBO
mw3667a5e1_02c9_44a0_acb4_b0431faa822d	Ab	

Modifier

Table 178: Properties of each modifier.

Id	Name	SBO
mw3667a5e1_02c9_44a0_acb4_b0431faa822d	Ab	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{70} = {} & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right) \\ & \cdot \mathrm{function\_52}\left(\left[\mathrm{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}\right], \right. \\ & \qquad \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \qquad \left. \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) \end{aligned} \tag{309}$$

$$\begin{aligned} & \mathrm{function\_52}\left(\left[\mathrm{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}\right], \right. \\ & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \left. \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) \\ = {} & \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\mathrm{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}\right]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \end{aligned} \tag{310}$$

$$\begin{aligned} & \mathrm{function\_52}\left(\left[\mathrm{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}\right], \right. \\ & \mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right), \\ & \left. \mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30}\right) \\ = {} & \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\mathrm{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d}\right]}{\mathrm{vol}\left(\mathrm{mw88ca8d9a\_f5cf\_41bf\_9d9d\_fc48f6e1a19e}\right)} \end{aligned} \tag{311}$$

10.71 Reaction mw9629d028_fcc0_4886_9e4d_36eecdb0381d

This is an irreversible reaction of one reactant forming no product influenced by one modifier.

Name mw9629d028_fcc0_4886_9e4d_36eecdb0381d

Reaction equation

$$\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c} \xrightarrow{\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}} \emptyset \tag{312}$$

Reactant

Table 179: Properties of each reactant.

Id	Name	SBO
mwf7796221_1fea_4274_a93e_c00adbf5778c	Ab	

Modifier

Table 180: Properties of each modifier.

Id	Name	SBO
mwf7796221_1fea_4274_a93e_c00adbf5778c	Ab	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{71} = {} & \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right) \\ & \cdot \mathrm{function\_53}\left(\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30},\right. \\ & \qquad \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \\ & \qquad \left.\left[\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}\right]\right) \end{aligned} \tag{313}$$

$$\begin{aligned} & \mathrm{function\_53}\left(\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30},\right. \\ & \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \\ & \left.\left[\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}\right]\right) \\ = {} & \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}\right]}{\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \end{aligned} \tag{314}$$

$$\begin{aligned} & \mathrm{function\_53}\left(\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30},\right. \\ & \mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right), \\ & \left.\left[\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}\right]\right) \\ = {} & \frac{\mathrm{mwbd1d5bc3\_d4b9\_4aec\_9b86\_6f776da20a30} \cdot \left[\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c}\right]}{\mathrm{vol}\left(\mathrm{mwe9501423\_9fb4\_494b\_b5b6\_288f3fcb17b5}\right)} \end{aligned} \tag{315}$$

11 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.

11.1 Species mwf626e95e_543f_41e4_aad4_c6bf60ab345b

Name IL6

Initial concentration $4.82830639918582 \cdot 10^{-5}$ nmol $\cdot$ l^{-1}

This species takes part in eleven reactions (as a reactant in reaction_1, reaction_4, mw61d2af92-_6da5_41ce_b90e_aa6f430e6ba1, mw1046000b_e1e8_4f6f_82a1_532d2aa793bb, mwb1879013-_5fcd_490c_8b01_eaf84df15b9a and as a product in reaction_3 and as a modifier in reaction-_1, reaction_4, mw61d2af92_6da5_41ce_b90e_aa6f430e6ba1, mw1046000b_e1e8_4f6f-_82a1_532d2aa793bb, mwb1879013_5fcd_490c_8b01_eaf84df15b9a).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf626e95e\_543f\_41e4\_aad4\_c6bf60ab345b} = v_3 - v_1 - v_4 - v_{30} - v_{34} - v_{54} \quad (316)$$

11.2 Species mwbbbce920_e8dd_4320_9386_fc94bfb2fc99

Name sgp130

Initial concentration 3.9 nmol $\cdot$ l^{-1}

This species takes part in nine reactions (as a reactant in reaction_2, mw1c5a5ff7_5130-_490f_a740_6a744ccf8a94, mw7b56053c_7256_4703_a8c3_4fd46b2c23d0, mwb6a99eb5_ea4c-_4733_98dd_1daf5ec6b0db and as a product in mw50c6744c_e883_4612_8663_e38750cbad1b and as a modifier in reaction_2, mw1c5a5ff7_5130_490f_a740_6a744ccf8a94, mw7b56053c-_7256_4703_a8c3_4fd46b2c23d0, mwb6a99eb5_ea4c_4733_98dd_1daf5ec6b0db).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwbbbce920\_e8dd\_4320\_9386\_fc94bfb2fc99} = v_{48} - v_2 - v_{40} - v_{41} - v_{49} \quad (317)$$

11.3 Species mw810ff751_fa4e_4143_bd50_169b3e325e1e

Name sR_IL6_sgp130

Initial concentration 0.00158509246200931 nmol $\cdot$ l^{-1}

This species takes part in six reactions (as a reactant in mw01babcdf_0f03_46b0_81b1_201cc846e361, mwae5dbb44_7de5_46ab_8c20_ac4f8956b0f0 and as a product in reaction_2 and as a modifier in reaction_2, mw01babcdf_0f03_46b0_81b1_201cc846e361, mwae5dbb44_7de5_46ab-_8c20_ac4f8956b0f0).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw810ff751\_fa4e\_4143\_bd50\_169b3e325e1e} = v_2 - v_{44} - v_{45} \quad (318)$$

11.4 Species mw114aa90f_5f5b_4fe8_9406_361c8489b6a1

Name CRP

Initial concentration $40.196036452179\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in eight reactions (as a reactant in reaction_5, mwcdc24bd4_d9e4-_47fe_8300_d222d853111c, mw71d90b81_8211_4039_8807_12a7fe03206c and as a product in mwff2ebcf1_dcf1_47b9_9cac_7306fc6f7f76, mw71d90b81_8211_4039_8807_12a7fe03206c and as a modifier in reaction_5, mwcdc24bd4_d9e4_47fe_8300_d222d853111c, mw71d90b81-_8211_4039_8807_12a7fe03206c).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw114aa90f\_5f5b\_4fe8\_9406\_361c8489b6a1} = v_{39} + v_{52} - v_5 - v_{38} - v_{52} \quad (319)$$

11.5 Species mw30ae63db_6cd3_4b6f_93ad_3350cd360bcc

Name sR

Notes nMSerum conc. of about 80 ng/ml and MW of 50 kDa.

Initial concentration $1.05563779110703\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in ten reactions (as a reactant in reaction_1, mwfb35eca9_7afc_4ba8-_a46c_738cab57eb9f, mw12a9fa7e_a273_4c1e_b970_ed33f3a9a705, mw41c27823_d7ee_4554-_9eac_3d5beec8e854 and as a product in mw432fde6e_59ab_47f0_9fb1_086433a602e3, mw71d90b81-_8211_4039_8807_12a7fe03206c and as a modifier in reaction_1, mwfb35eca9_7afc_4ba8-_a46c_738cab57eb9f, mw12a9fa7e_a273_4c1e_b970_ed33f3a9a705, mw41c27823_d7ee_4554-_9eac_3d5beec8e854).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw30ae63db\_6cd3\_4b6f\_93ad\_3350cd360bcc} = v_{46} + v_{52} - v_1 - v_{29} - v_{33} - v_{47} \quad (320)$$

11.6 Species mw03db56ac_8dc6_4931_ae82_fef706d2ee3d

Name sR_IL6

Initial concentration $1.99215203510923 \cdot 10^{-5}\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in eight reactions (as a reactant in reaction_2, mwbe8567ce_3349-_4442_8b12_53cd9bc168e7, mw8e8b65a8_6830_4091_9a40_19645e8fe554 and as a product in reaction_1 and as a modifier in reaction_1, reaction_2, mwbe8567ce_3349_4442-_8b12_53cd9bc168e7, mw8e8b65a8_6830_4091_9a40_19645e8fe554).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw03db56ac\_8dc6\_4931\_ae82\_fef706d2ee3d} = v_1 - v_2 - v_{32} - v_{35} \quad (321)$$

11.7 Species mwf345ed7a_0622_403c_b816_c8749a2c9ded

Name Ab

Initial concentration $10^{-26}\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

Involved in events event_1, event_2, event_3, event_4

This species takes part in ten reactions (as a reactant in mwdf4ba845_7271_4ada_b43f_fdac83df3b5c, mwb1879013_5fcd_490c_8b01_eaf84df15b9a, mwba7f4605_8571_439b_b3ab_eb0b43808db8, mw131e3c9d_e77d_48c0_bdbb_77b2c10aaf3d, mw14940d1f_6a1f_47cb_8170_801ba645f4c1 and as a modifier in mwdf4ba845_7271_4ada_b43f_fdac83df3b5c, mwb1879013_5fcd_490c_8b01_eaf84df15b9a, mwba7f4605_8571_439b_b3ab_eb0b43808db8, mw131e3c9d_e77d_48c0_bdbb_77b2c10aaf3d, mw14940d1f_6a1f_47cb_8170_801ba645f4c1).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf345ed7a\_0622\_403c\_b816\_c8749a2c9ded} = -v_{53} - v_{54} - v_{57} - v_{64} - v_{65} \quad (322)$$

Furthermore, four events influence this species' rate of change.

11.8 Species mw1da111f2_a036_4392_8512_015005bdcbb7

Name Ab_IL6

Initial concentration $9.8773753365085\cdot 10^{-28}\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in eight reactions (as a reactant in mw30abb016_4300_4f40_a1b3_f865d0a45707, mwa2f4d966_ae2c_4ed2_b522_12755f12ff15, mw700e677e_d3b6_4a97_991f_279605a9abeb and as a product in mwb1879013_5fcd_490c_8b01_eaf84df15b9a and as a modifier in mwb1879013_5fcd_490c_8b01_eaf84df15b9a, mw30abb016_4300_4f40_a1b3_f865d0a45707, mwa2f4d966_ae2c_4ed2_b522_12755f12ff15, mw700e677e_d3b6_4a97_991f_279605a9abeb).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw1da111f2\_a036\_4392\_8512\_015005bdcbb7} = v_{54} - v_{55} - v_{66} - v_{68} \quad (323)$$

11.9 Species mwa2d8dd1c_bb9a_4552_8738_e24671651c1d

Name Ab_sR_IL6

Initial concentration $-1.15536021610192\cdot 10^{-26}\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in six reactions (as a reactant in mw14d351b9_623a_48e8_a21c_854411039120, mwb62106e7_e959_4a1d_9a00_b36d4e19a48f, mwad648b6c_45ca_4f41_9747_06db1f6060fc and as a modifier in mw14d351b9_623a_48e8_a21c_854411039120, mwb62106e7_e959_4a1d_9a00_b36d4e19a48f, mwad648b6c_45ca_4f41_9747_06db1f6060fc).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa2d8dd1c\_bb9a\_4552\_8738\_e24671651c1d} = -v_{56} - v_{67} - v_{69} \quad (324)$$

11.10 Species mw80848184_e2dd_47ce_86d7_7a21479342bd

Name gp130

Notes nM2000 molecules/cell in HepG2 cells with a volume of 2.8 pL

Initial concentration $0.437781481555189\ \text{nmol}\cdot\text{l}^{-1}$

This species takes part in seven reactions (as a reactant in reaction_6, reaction_8, mw4a00a3a4-_778f_4952_8100_2dc3cc2b7046 and as a product in mw391f3b8e_5649_4851_b2e2_782cb3e015b6 and as a modifier in reaction_6, reaction_8, mw4a00a3a4_778f_4952_8100_2dc3cc2b7046).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mw80848184\_e2dd\_47ce\_86d7\_7a21479342bd} = v_{25} - v_6 - v_8 - v_{26} \qquad (325)$$

11.11 Species mwd2d9d93a_3bd1_4f17_bac1_baba9ef2d55a

Name R_IL6_gp130

Initial concentration $1.37781774217442\cdot 10^{-6}\ \text{nmol}\cdot\text{l}^{-1}$

This species takes part in nine reactions (as a reactant in reaction_16, reaction_12 and as a product in reaction_6, reaction_8, mwb675e13a_26c0_4b18_a8c3_0f5a62090ba4 and as a modifier in reaction_6, reaction_8, reaction_16, reaction_12).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mwd2d9d93a\_3bd1\_4f17\_bac1\_baba9ef2d55a} = v_6 + v_8 + v_{23} - v_9 - v_{14} \qquad (326)$$

11.12 Species mw4638f126_8cb8_4021_ab41_6ae195743ba0

Name sR_IL6

Initial concentration $1.75027407369445\cdot 10^{-5}\ \text{nmol}\cdot\text{l}^{-1}$

This species takes part in eight reactions (as a reactant in reaction_6, mwd77df15b_fed7-_41a8_a3d6_b0f6c590c5f6 and as a product in mw8e8b65a8_6830_4091_9a40_19645e8fe554, mwa812f08f_1035_42bd_82d2_72d691308f88 and as a modifier in reaction_6, mw8e8b65a8-_6830_4091_9a40_19645e8fe554, mwa812f08f_1035_42bd_82d2_72d691308f88, mwd77df15b-_fed7_41a8_a3d6_b0f6c590c5f6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mw4638f126\_8cb8\_4021\_ab41\_6ae195743ba0} = v_{35} + v_{36} - v_6 - v_{43} \qquad (327)$$

11.13 Species mw10315fa3_6f13_4618_bda8_a8694bd3c374

Name R

Initial concentration $0.438768626591536\ \text{nmol}\cdot\text{l}^{-1}$

This species takes part in five reactions (as a reactant in reaction_7, reaction_15 and as a product in reaction_14 and as a modifier in reaction_7, reaction_15).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mw10315fa3\_6f13\_4618\_bda8\_a8694bd3c374} = v_{16} - v_7 - v_{12} \qquad (328)$$

11.14 Species mw0adf3eb4_a196_4c48_b10d_4e9e9faaf9e1

Name IL6

Initial concentration $5.88006568524737 \cdot 10^{-5}$ nmol $\cdot$ l^{-1}

This species takes part in eight reactions (as a reactant in reaction_7, mwa812f08f_1035-_42bd_82d2_72d691308f88, mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1 and as a product in mw1046000b_e1e8_4f6f_82a1_532d2aa793bb and as a modifier in reaction_7, mw1046000b-_e1e8_4f6f_82a1_532d2aa793bb, mwa812f08f_1035_42bd_82d2_72d691308f88, mw8fb6c0a7-_b05d_4c2a_8866_77eb81f063d1).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw0adf3eb4\_a196\_4c48\_b10d\_4e9e9faaf9e1} = v_{34} - v_7 - v_{36} - v_{61} \tag{329}$$

11.15 Species mw7d86cc23_a1af_44c3_bdb9_71e9b1bb2a83

Name R_IL6

Initial concentration $8.80086553913515 \cdot 10^{-7}$ nmol $\cdot$ l^{-1}

This species takes part in six reactions (as a reactant in reaction_8, reaction_11 and as a product in reaction_7 and as a modifier in reaction_7, reaction_8, reaction_11).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw7d86cc23\_a1af\_44c3\_bdb9\_71e9b1bb2a83} = v_7 - v_8 - v_{13} \tag{330}$$

11.16 Species mw0eb6c959_d408_45a0_a450_928b8c5876bb

Name Ractive

Initial concentration 0.015961020646031 nmol $\cdot$ l^{-1}

This species takes part in eight reactions (as a reactant in reaction_9, reaction_13, mwb675e13a-_26c0_4b18_a8c3_0f5a62090ba4 and as a product in reaction_16, reaction_9 and as a modifier in reaction_9, reaction_13, mwb675e13a_26c0_4b18_a8c3_0f5a62090ba4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw0eb6c959\_d408\_45a0\_a450\_928b8c5876bb} = v_9 + v_{10} - v_{10} - v_{15} - v_{23} \tag{331}$$

11.17 Species mw42054cd7_17af_46da_970c_7f99151906ad

Name STAT3

Initial concentration 9.06918671945582 nmol $\cdot$ l^{-1}

This species takes part in three reactions (as a reactant in reaction_9 and as a product in reaction_10 and as a modifier in reaction_9).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw42054cd7\_17af\_46da\_970c\_7f99151906ad} = v_{11} - v_{10} \tag{332}$$

11.18 Species mw39c2e431_fdc3_4964_be29_6ca856620b1b

Name pSTAT3

Initial concentration $0.930813280544178\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in reaction_10 and as a product in reaction_9 and as a modifier in reaction_10).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw39c2e431\_fdc3\_4964\_be29\_6ca856620b1b} = v_{10} - v_{11} \tag{333}$$

11.19 Species mwd5313618_89eb_4c8c_bc82_66f10f966349

Name CRP

Initial concentration $28.1011462455689\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

Involved in rule mwd5313618_89eb_4c8c_bc82_66f10f966349

This species takes part in two reactions (as a reactant in mwab0012ac_e5f2_4904_9893_820fd210402e and as a modifier in mwab0012ac_e5f2_4904_9893_820fd210402e). Not these but one rule determines the species' quantity because this species is on the boundary of the reaction system.

11.20 Species mw2e464cf3_a09c_4b7c_9f3c_06720016a48e

Name sR

Initial concentration $1.51063415282403\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in mwa812f08f_1035_42bd_82d2_72d691308f88 and as a product in mw12a9fa7e_a273_4c1e_b970_ed33f3a9a705 and as a modifier in mw12a9fa7e_a273_4c1e_b970_ed33f3a9a705, mwa812f08f_1035_42bd_82d2_72d691308f88).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw2e464cf3\_a09c\_4b7c\_9f3c\_06720016a48e} = v_{33} - v_{36} \tag{334}$$

11.21 Species mw36ea78c1_ed71_4def_96d3_857a442d7195

Name CRPExtracellular

Initial concentration $74.1039387714523\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a product in mwab0012ac_e5f2_4904_9893_820fd210402e, mwcdc24bd4_d9e4_47fe_8300_d222d853111c and as a modifier in mwcdc24bd4_d9e4_47fe_8300_d222d853111c).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw36ea78c1\_ed71\_4def\_96d3\_857a442d7195} = v_{37} + v_{38} \tag{335}$$

11.22 Species mw147d30ec_478e_4090_b496_128a131d29eb

Name sgp130

Initial concentration $5.58113535879753\ \text{nmol}\cdot\text{l}^{-1}$

This species takes part in four reactions (as a reactant in mwd77df15b_fed7_41a8_a3d6_b0f6c590c5f6 and as a product in mw7b56053c_7256_4703_a8c3_4fd46b2c23d0 and as a modifier in mw7b56053c_7256_4703_a8c3_4fd46b2c23d0, mwd77df15b_fed7_41a8_a3d6_b0f6c590c5f6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mw147d30ec\_478e\_4090\_b496\_128a131d29eb} = v_{41} - v_{43} \tag{336}$$

11.23 Species mwab41493c_6349_45f1_a226_3030cfed0e06

Name sR_IL6_sgp130

Initial concentration $0.00209599327398083\ \text{nmol}\cdot\text{l}^{-1}$

This species takes part in four reactions (as a product in mwd77df15b_fed7_41a8_a3d6_b0f6c590c5f6, mwae5dbb44_7de5_46ab_8c20_ac4f8956b0f0 and as a modifier in mwd77df15b_fed7_41a8_a3d6_b0f6c590c5f6, mwae5dbb44_7de5_46ab_8c20_ac4f8956b0f0).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mwab41493c\_6349\_45f1\_a226\_3030cfed0e06} = v_{43} + v_{45} \tag{337}$$

11.24 Species mw1d9426a3_e1e9_49e0_ad77_eb6833be398a

Name Ab_sR_IL6

Initial concentration $-1.40627697813568\cdot 10^{-27}\ \text{nmol}\cdot\text{l}^{-1}$

This species takes part in four reactions (as a reactant in mw5d9fcd0c_ca08_4444_b509_2ea4777e0025 and as a product in mwb62106e7_e959_4a1d_9a00_b36d4e19a48f and as a modifier in mw5d9fcd0c_ca08_4444_b509_2ea4777e0025, mwb62106e7_e959_4a1d_9a00_b36d4e19a48f).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mw1d9426a3\_e1e9\_49e0\_ad77\_eb6833be398a} = v_{67} - v_{63} \tag{338}$$

11.25 Species mwf405687b_7401_44ec_a0d6_4a2b35c13e8a

Name Ab_IL6

Initial concentration $1.08229088508198\cdot 10^{-27}\ \text{nmol}\cdot\text{l}^{-1}$

This species takes part in six reactions (as a reactant in mw3e76b10b_5420_4828_8c70_b91b767132d0 and as a product in mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1, mwa2f4d966_ae2c_4ed2_b522_12755f12ff15 and as a modifier in mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1, mw3e76b10b_5420_4828_8c70_b91b767132d0, mwa2f4d966_ae2c_4ed2_b522_12755f12ff15).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mwf405687b\_7401\_44ec\_a0d6\_4a2b35c13e8a} = v_{61} + v_{66} - v_{62} \tag{339}$$

11.26 Species mw3667a5e1_02c9_44a0_acb4_b0431faa822d

Name Ab

Initial concentration 10^{-26} nmol · l^{-1}

This species takes part in six reactions (as a reactant in mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1, mw2ae288ab_7d03_4a84_a024_c711ad2b77e6 and as a product in mw131e3c9d_e77d_48c0_bdbb_77b2c10aaf3d and as a modifier in mw8fb6c0a7_b05d_4c2a_8866_77eb81f063d1, mw131e3c9d_e77d_48c0_bdbb_77b2c10aaf3d, mw2ae288ab_7d03_4a84_a024_c711ad2b77e6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw3667a5e1\_02c9\_44a0\_acb4\_b0431faa822d} = v_{64} - v_{61} - v_{70} \tag{340}$$

11.27 Species mw7becb5fe_8da8_4285_a821_0d77ad811b62

Name sR_IL6

Initial concentration $2.37592804897571 \cdot 10^{-5}$ nmol · l^{-1}

This species takes part in eight reactions (as a reactant in reaction_41, mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c and as a product in mw4c099d5c_200f_474e_8ec1_59e9223a8afd, mwbe8567ce_3349_4442_8b12_53cd9bc168e7 and as a modifier in reaction_41, mw4c099d5c_200f_474e_8ec1_59e9223a8afd, mwbe8567ce_3349_4442_8b12_53cd9bc168e7, mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw7becb5fe\_8da8\_4285\_a821\_0d77ad811b62} = v_{31} + v_{32} - v_{17} - v_{42} \tag{341}$$

11.28 Species mw8c9107e6_f51d_442d_b2dc_2bfdbb8482ca

Name gp130

Initial concentration 0.437466744395661 nmol · l^{-1}

This species takes part in five reactions (as a reactant in reaction_41, mw6f470e13_f0e4_4294_83d8_59dd5670d10c and as a product in mw6db30657_4e56_4c3a_8575_9c67393dde4f and as a modifier in reaction_41, mw6f470e13_f0e4_4294_83d8_59dd5670d10c).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw8c9107e6\_f51d\_442d\_b2dc\_2bfdbb8482ca} = v_{27} - v_{17} - v_{28} \tag{342}$$

11.29 Species mw824bc3d4_1ac3_4912_9b51_8f14ff1c96b9

Name R_IL6_gp130

Initial concentration $1.794860923584 \cdot 10^{-6}$ nmol · l^{-1}

This species takes part in seven reactions (as a reactant in reaction_46, reaction_44 and as a product in reaction_41, mw64df7c9e_35da_4c7f_be56_c5dabfb060b6 and as a modifier in reaction_41, reaction_46, reaction_44).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw824bc3d4\_1ac3\_4912\_9b51\_8f14ff1c96b9} = v_{17} + v_{24} - v_{18} - v_{21} \quad (343)$$

11.30 Species mw6cce2109_0e32_4dd9_98ec_41173e8ef07d

Name Ractive

Initial concentration $0.0207923272427145\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in eight reactions (as a reactant in reaction_42, reaction_45, mw64df7c9e_35da_4c7f_be56_c5dabfb060b6 and as a product in reaction_46, reaction_42 and as a modifier in reaction_42, reaction_45, mw64df7c9e_35da_4c7f_be56_c5dabfb060b6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw6cce2109\_0e32\_4dd9\_98ec\_41173e8ef07d} = v_{18} + v_{19} - v_{19} - v_{22} - v_{24} \quad (344)$$

11.31 Species mw2b255f94_8018_4b99_bde8_918eeac45446

Name STAT3

Initial concentration $8.76987224478195\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in reaction_42 and as a product in reaction_43 and as a modifier in reaction_42).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw2b255f94\_8018\_4b99\_bde8\_918eeac45446} = v_{20} - v_{19} \quad (345)$$

11.32 Species mw48867e93_f170_44e8_ac7a_185b23e1bf3b

Name pSTAT3

Initial concentration $1.23012775521805\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in reaction_43 and as a product in reaction_42 and as a modifier in reaction_43).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw48867e93\_f170\_44e8\_ac7a\_185b23e1bf3b} = v_{19} - v_{20} \quad (346)$$

11.33 Species mw0083d743_836f_4238_a17f_4602193d5bc0

Name geneProduct

Initial concentration $36.1475993924768\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

Involved in rule mw0083d743_836f_4238_a17f_4602193d5bc0

One rule determines the species' quantity.

11.34 Species mwd31f52cc_04e7_40e0_885f_c7b2d9e62215

Name sR

Initial concentration $1.51017985268264\ \text{nmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in mw4c099d5c_200f_474e_8ec1_59e9223a8afd and as a product in mwfb35eca9_7afc_4ba8_a46c_738cab57eb9f and as a modifier in mwfb35eca9_7afc_4ba8_a46c_738cab57eb9f, mw4c099d5c_200f_474e_8ec1_59e9223a8afd).

$$\frac{\text{d}}{\text{d}t}\text{mwd31f52cc\_04e7\_40e0\_885f\_c7b2d9e62215} = v_{29} - v_{31} \tag{347}$$

11.35 Species mw2c9b0499_3325_4394_8af3_bbf653a944a0

Name IL6

Initial concentration $7.43306813085487 \cdot 10^{-4}\ \text{nmol} \cdot \text{l}^{-1}$

This species takes part in nine reactions (as a reactant in mw4c099d5c_200f_474e_8ec1_59e9223a8afd, mwf913ea0b_785a_4701_ac91_b18ab5dd5a89, mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1 and as a product in mw61d2af92_6da5_41ce_b90e_aa6f430e6ba1, mw1ce0c484_681f_4d85_8ffe_392d0c100cfa and as a modifier in mw61d2af92_6da5_41ce_b90e_aa6f430e6ba1, mw4c099d5c_200f_474e_8ec1_59e9223a8afd, mwf913ea0b_785a_4701_ac91_b18ab5dd5a89, mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1).

$$\frac{\text{d}}{\text{d}t}\text{mw2c9b0499\_3325\_4394\_8af3\_bbf653a944a0} = v_{30} + v_{50} - v_{31} - v_{51} - v_{60} \tag{348}$$

11.36 Species mwd65b5b39_dc1b_4e77_a999_67277a880e5e

Name sgp130

Initial concentration $5.58075296241649\ \text{nmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c and as a product in mw1c5a5ff7_5130_490f_a740_6a744ccf8a94 and as a modifier in mw1c5a5ff7_5130_490f_a740_6a744ccf8a94, mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c).

$$\frac{\text{d}}{\text{d}t}\text{mwd65b5b39\_dc1b\_4e77\_a999\_67277a880e5e} = v_{40} - v_{42} \tag{349}$$

11.37 Species mw6335d5d7_c7b0_4bc0_b883_f7ee4915c2c3

Name sR_IL6_sgp130

Initial concentration $0.00247838965501352\ \text{nmol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a product in mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c, mw01babcdf_0f03_46b0_81b1_201cc846e361 and as a modifier in mw8be158f1_ea81_45bf_80d4_6e31cd83fe6c, mw01babcdf_0f03_46b0_81b1_201cc846e361).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw6335d5d7\_c7b0\_4bc0\_b883\_f7ee4915c2c3} = v_{42} + v_{44} \tag{350}$$

11.38 Species mwf7796221_1fea_4274_a93e_c00adbf5778c

Name Ab

Initial concentration $10^{-26}\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in six reactions (as a reactant in mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1, mw9629d028_fcc0_4886_9e4d_36eecdb0381d and as a product in mw14940d1f_6a1f_47cb_8170_801ba645f4c1 and as a modifier in mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1, mw14940d1f_6a1f_47cb_8170_801ba645f4c1, mw9629d028_fcc0_4886_9e4d_36eecdb0381d).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf7796221\_1fea\_4274\_a93e\_c00adbf5778c} = v_{65} - v_{60} - v_{71} \tag{351}$$

11.39 Species mw5d764bb8_5693_4ac8_9557_f65992cc5eb0

Name Ab_IL6

Initial concentration $1.04407998182156\cdot 10^{-26}\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in six reactions (as a reactant in mw8b4e96ed_0bcc_4ad6_b560_366e173a6e6b and as a product in mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1, mw700e677e_d3b6_4a97_991f_279605a9abeb and as a modifier in mw8b4e96ed_0bcc_4ad6_b560_366e173a6e6b, mwa3cb4a9b_d628_4807_8847_bdcd9b40c7f1, mw700e677e_d3b6_4a97_991f_279605a9abeb).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw5d764bb8\_5693\_4ac8\_9557\_f65992cc5eb0} = v_{60} + v_{68} - v_{59} \tag{352}$$

11.40 Species mw2f3d48e0_c9c4_4a0e_aca3_9241eb573296

Name Ab_sR_IL6

Initial concentration $-2.42821658464018\cdot 10^{-27}\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in mw5be6711a_526a_4a58_80c6_d353dcabdf87 and as a product in mwad648b6c_45ca_4f41_9747_06db1f6060fc and as a modifier in mw5be6711a_526a_4a58_80c6_d353dcabdf87, mwad648b6c_45ca_4f41_9747_06db1f6060fc).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw2f3d48e0\_c9c4\_4a0e\_aca3\_9241eb573296} = v_{69} - v_{58} \tag{353}$$

11.41 Species mwbc2f5464_81e5_43fd_8b39_f5a2756af72f

Name Ab

Initial concentration $10^{-26}\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in two reactions (as a product in mwdf4ba845_7271_4ada_b43f_fdac83df3b5c and as a modifier in mwdf4ba845_7271_4ada_b43f_fdac83df3b5c).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwbc2f5464\_81e5\_43fd\_8b39\_f5a2756af72f} = v_{53} \tag{354}$$

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