SBML Model Report

Model name: "Bidkhori2012 - EGFR signalling in NSCLC"

May 6, 2016

1 General Overview

This is a document in SBML Level 2 Version 4 format. This model was created by the following two authors: Vijayalakshmi Chelliah[1] and Gholamreza Bidkhori[2] at May thirteenth 2013 at 11:10 a. m. and last time modified at October 21st 2014 at 4:02 p. m. Table 1 gives 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	1
species types	0	species	109
events	0	constraints	0
reactions	117	function definitions	0
global parameters	0	unit definitions	0
rules	1	initial assignments	0

Model Notes

Bidkhori2012 - EGFR signalling in NSCLC

The paper describes and compares two models on EGFR signalling between normal and NSCLC cells. Moreover, it is shown that ERK (MAPK), STAT and Akt factor's activation

[1]EMBL-EBI, viji@ebi.ac.uk
[2]university of tehran, bidkhori@ibb.ut.ac.ir

pattern are different between normal and NSCLA models. This model corresponds to EGFR signalling in NSCLA cells.

Created by The MathWorks, Inc. SimBiology tool, Version 3.3

This model is described in the article:Modeling of tumor progression in NSCLC and intrinsic resistance to TKI in loss of PTEN expression.Bidkhori G, Moeini A, Masoudi-Nejad APloS one [2012, 7(10):e48004]

Abstract:

EGFR signaling plays a very important role in NSCLC. It activates Ras/ERK, PI3K/Akt and STAT activation pathways. These are the main pathways for cell proliferation and survival. We have developed two mathematical models to relate to the different EGFR signaling in NSCLC and normal cells in the presence or absence of EGFR and PTEN mutations. The dynamics of downstream signaling pathways vary in the disease state and activation of some factors can be indicative of drug resistance. Our simulation denotes the effect of EGFR mutations and increased expression of certain factors in NSCLC EGFR signaling on each of the three pathways where levels of pERK, pSTAT and pAkt are increased. Over activation of ERK, Akt and STAT3 which are the main cell proliferation and survival factors act as promoting factors for tumor progression in NSCLC. In case of loss of PTEN, Akt activity level is considerably increased. Our simulation results show that in the presence of erlotinib, downstream factors i.e. pAkt, pSTAT3 and pERK are inhibited. However, in case of loss of PTEN expression in the presence of erlotinib, pAkt level would not decrease which demonstrates that these cells are resistant to erlotinib.

This model is hosted on BioModels Database and identifiedby: MODEL1304020001 .

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

2 Unit Definitions

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

2.1 Unit `substance`

Notes Mole is the predefined SBML unit for `substance`.

Definition mol

2.2 Unit `volume`

Notes Litre is the predefined SBML unit for `volume`.

Definition l

2.3 Unit area

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

Definition m^2

2.4 Unit length

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

Definition m

2.5 Unit time

Notes Second is the predefined SBML unit for time.

Definition s

3 Compartment

This model contains one compartment.

Table 2: Properties of all compartments.

Id	Name	SBO	Spatial Dimensions	Size	Unit	Constant
mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	unnamed	0000290	3	1	litre	☑

3.1 Compartment mw1637dd35_5f09_4a8d_bb7f_58717cdf1612

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

Name unnamed

SBO:0000290 physical compartment

4 Species

This model contains 109 species. Section 7 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
mwe2fff28d-_182c_4a1c_9882-_f17774c0958a	EGF	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw93907b2d-_53db_4080_9e3f-_3eb304441ab9	EGFR	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw7eacabf9-_d68c_491a_aba2-_ec0809a8ecc8	EGF-EGFR	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa8f2e7b2-_0927_4ab4_a817-_dddc43bb4fa3	EGF-EGFR2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwbfcf6773-_1915_432c_b1d2-_1f246094cc74	pEGF-EGFR2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw19122f7d-_f92e_4dc0_922f-_6b681db65b0b	cbl	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw3c2e1b43-_29ca_491a_93e9-_c723a993d6fb	Shc	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw5198d3c2-_879c_4f0d_b4f8-_cd40efe0b1cf	pEGF-EGFR2-Shc	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwe57c3282-_5935_405c_8c0b-_7fadb7a5de17	SHP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw954e8fcb-_ac0a_459d_8878-_f19080208a17	pEGF-EGFR2-SHP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa98802cb-_c977_4fe0_9e67-_5000904c2c36	pEGF-EGFR2-pShc	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa0349407-_8187_48fc_9e94-_5698ccc4e06d	pShc	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwf9999977-_6f0e_4e35_9b73-_75587f3448e9	pShc-SHP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwf430a579-_ecbf_48ba_80c2-_06e455808f2a	Grb2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw504578d8-_96c3_471f_8a7e-_8c14e7535d3d	pEGF-EGFR2-pShc-Grb2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw45ab688a-_6467_4a3e_a779-_2118fa84d69e	pEGF-EGFR2-pShc-Grb2-SHP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw9dcaa655-_a755_426e_a3fa-_1ad7c3c45575	SOS	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwfbda4e09-_0cbb_49bc_ae69-_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwb1bc2058-_e6d8_4680_9e6c-_d27bb366cde0	pEGF-EGFR2-pShc-Grb2-SOS-cbl	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw1093b3af-_1864_4ba3_a541-_6009a9921282	Grb2-SOS	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd9462e5b-_a272_4b66_ab66-_fde9266b1a43	pEGF-EGFR2-Grb2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw925b938a-_fe73_4664_ba6f-_e72e57780891	pEGF-EGFR2-Grb2-SHP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwf8cc7834-_bf4f_4ccd_8235-_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw481cd12b-_61ba_44e5_93bf-_8b88c6c4a4e7	pEGF-EGFR2-Grb2-SOS-cbl	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw8f5a7b5c-_ca4c_4a4c_85b1-_e5d640c426bf	Ras-GDP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mwf40d6176-_abfc_4a30_886f-_83a19fcffc48	pEGF-EGFR2-pShc-Grb2-SOS-Ras-GDP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa54a9c38-_c98b_45e5_8432-_4119fb777e44	Ras-GTP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw28464aad-_8013_4a23_ae09-_a406954859a6	pEGF-EGFR2-Grb2-SOS-Ras-GDP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw7cff9a0e-_094d_498e_bf7f-_7b162c61d63a	Ras-GAP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwdf82303e-_323f_4c51_a858-_56a59233cd98	Ras-GTP-Ras-GAP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd39388fd-_4f85_4d1c_b2a3-_37857c595a2d	pEGF-EGFR2-Ras-GAP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd7bf31ba-_b05c_4c45_bb2f-_6a2468a2a507	pEGF-EGFR2-Ras-GAP-Ras-GTP	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwbf5cb039-_b830_4282_aa22-_a3dda6272ec1	pEGF-EGFR2-Ras-GAP-SHP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw66ac98c4-_7e7b_4071_954d-_43eb17584220	Raf1	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw83de7813_4941_45a6_a320_a551165bf22a	Raf1-Ras-GTP	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw0834731b_0477_4217_a53b_30cef851191b	MEK	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw4628f984_eb87_4922_9760_4975095ce6eb	Raf1active-MEK	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28	pMEK	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw12ba4000_d452_420c_be63_96d2848aca32	Raf1active-pMEK	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw7e23b961_186b_47a0_a8b5_5e9957766792	ERK	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwcedf8ecd_67bd_4b91_aa04_d58782dec2a4	ppMEK-ERK	mw1637dd35_5f09_4a8d_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mwcc894c94-_0ddf_42cc_913e-_cdcc4d471d94	pERK	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw6cb74b27-_ffef_49bb_8ffb-_622d552caa9e	ppMEK-pERK	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd784228d-_0cb5_468a_ac70-_02d8f04b3d9c	ppERK	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwbaaeb210-_4806_4076_9d60-_219f4ed945b6	Pase	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw19a33ad5-_5ba4_46c7_84eb-_c1287f02bcd5	Raf1active-Pase	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwf9e2a044-_7774_400b_a74e-_a111b4a21f30	Pase2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwcb572fe2-_c3ac_40e7_8141-_da7d55fce18a	ppMEK-Pase2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa0acc0ac-_5fac_4a42_a3be-_e36db44994b0	pMEK-Pase2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd087f76b-_65dc_47f1_ba21-_c43774457686	Pase3	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw35f5adaa-_d1c0_433c_817d-_76e317f4cb15	pERK-Pase3	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa7e3103a-_6394_472c_b0f4-_8ed527f68604	ppERK-Pase3	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw5babe3d5-_a9af_4dfd_ac01-_35474ef64af2	ppERK-pEGF-EGFR2-pShc-Grb2-SOS	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw31ac308f-_da36_4f73_830f-_67f3e5b945d9	pSOS	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw31261227-_9cd6_4059_a0bb-_04dbf4888080	ppERK-pEGF-EGFR2-Grb2-SOS	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw0a0ca6ba-_cb28_44c7_a0c0-_1593cb720966	ProEGFR	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw06b8aada-_c92a_48eb_8ee7-_af3778cfe62f	pEGF-EGFR2-pShc-Grb2-SOS-cbl-EPn	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwb2366216-_0b3c_4f28_8303-_fec92c68dd57	EPn	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw1d5948e7-_5504_4224_9d71-_227911b4f1ee	pEGF-EGFR2-Grb2-SOS-cbl-EPn	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mwec1b368b-_8f73_47eb_9636-_9956389836eb	pEGF-EGFR2-cbl	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa455ec7e-_1a12_4659_95a2-_a5695d09ca60	pEGF-EGFR2-cbl-EPn	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw2ba1db9a-_4483_44fa_a3a2-_b4a5ea66898c	PI3K	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw0dc4e5eb-_4366_4799_bebc-_cfcffe5c06f5	pEGF-EGFR2-PI3K	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw1e591998-_65c0_484e_8a3b-_537a38d94de1	pEGF-EGFR2-pPI3K	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw78e207c4-_4faf_4b48_8e22-_1ee666e9cc4c	pPI3K	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwfc4a9c3d-_3ebb_4033_8b7d-_f4d7613d2078	TP4	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwbd6bb050-_89bd_41df_8cea-_d2e1fb77bafe	TP4-pPI3K	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw7033dfd6-_53c5_433b_a132-_f8cb34dea20f	TP4-PI3K	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mwb561d9f3-_a9ed_4bdb_8d40-_87be5cc3237a	PIP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw014cc419-_b720_4b90_9192-_2ec6e706c87d	pPI3K-PIP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd7f41594-_8377_4e2e_9528-_45d5a82ffdb4	PIP3	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwcef73e0e-_d195_4077_ae71-_723664ee1602	Akt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw62bf5275-_ce02_4e86_b3b6-_3f87a335e1de	Aktm	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw6e01967b-_3e2a_433d_bec6-_9f9cf3ba243c	PDK1	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw6353aa36-_d4a4_4254_8a1f-_1f7f571d4233	Aktm-PDK1	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwc1935afc-_56b1_4a87_923c-_ae6d82455d80	pAktm-PDK1	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw3d81860d-_d786_4fcc_b8bb-_64f1a2d7739d	pAktm	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw16796ffe-_4764_4a9f_942e-_149f42c1cd28	pAkt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa6e82fc9-_a0ce_461c_93c8-_17f3c807c1a1	pAkt-Takt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw236a3250-_4c96_4f6e_b94c-_ab3d12852801	Akt-Takt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw11a8b702-_b8ac_4513_b4aa-_063e51089812	Takt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw1a0cb97a-_b657_430b_963c-_92217f643081	pAktm-Takt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw9b937ca3-_0d82_46d5_8f5a-_0f9701002797	Aktm-Takt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw57a44eb0-_ace7_4294_905a-_219e87d3c281	pAktm-PDK1-Takt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwd746a5d5-_5e65_4a4c_9f84-_0e4a3cb7d2fc	Aktm-PDK1-Takt	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwa6994523-_5d45_4000_af0c-_3e94073bf183	pAkt_total	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mwdf92bdc0-_f426_45b0_9ad0-_876521f41312	pRaf1active	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw13abe2a6-_9905_40e5_8c23-_3fc8834b572a	STAT3c	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw2fd710a6-_7fe2_4484_bca6-_59c187bade8b	pEGF-EGFR2-STAT3c	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwb6a9aa2c-_62e7_410f_9c33-_dbe36dfcc4af	pSTAT3c	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw341082a0-_8017_4cc7_9d00-_b1211a196072	pEGF-EGFR2-pSTAT3c	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwcea1f1c1-_2f85_4af1_98ea-_ef14cf580c09	PP1	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwdc34472c-_a6f9_4002_951d-_e0e8da64eb42	pSTAT3c-PP1	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw472d5cb9-_120e_4f60_bbae-_1ae2552837dd	pSTAT3c-pSTAT3c-PP1	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw4f575c55-_7dff_45d7_94ad-_cda9621d5b63	pSTAT3c-pSTAT3c	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mwd2c465fb-_eea7_499a_8ea4-_f318a64cb9ee	STAT3c-pSTAT3c	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw4110f531-_7513_4786_8896-_7c9d969ff558	pSTAT3n-pSTAT3n	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwe3fd7f65-_b0d1_44d9_b6f3-_d2f7d332f664	pSTAT3n	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw0e1be972-_fded_4bff_a93d-_091ec942485f	PP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw0facb8f2-_95cf_4ddf_a959-_b24ba64f320b	pSTAT3n-pSTAT3n-PP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw9686f53e-_d343_45fd_b441-_9c992219546a	STAT3n-pSTAT3n	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw960bddeb-_e567_46dd_b2f3-_ed5e6a5c7972	STAT3n	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw8c85ff7f-_6368_4b11_a2ed-_ce83481b55e6	pSTAT3n-PP2	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw9da19d39-_6d91_41d0_b101-_f7748391705a	pEGF-EGFR2-STAT3c-cbl	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mw741407c8-_029b_44ed_9799-_02eb9d90ec9a	pEGF-EGFR2-STAT3c-cbl-EPn	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mwbedcc124-_dbf3_41ab_989e-_6b0900d7590a	pEGF-EGFR2-PI3K-cbl	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mw71d03aab-_fcb6_4f78_a788-_48f183d0b931	pEGF-EGFR2-PI3K-cbl-EPn	mw1637dd35_5f09_4a8d-_bb7f_58717cdf1612	$\mathrm{mol} \cdot \mathrm{l}^{-1}$	⊟	⊟

5 Rule

This is an overview of one rule.

5.1 Rule mwa6994523_5d45_4000_af0c_3e94073bf183

Rule mwa6994523_5d45_4000_af0c_3e94073bf183 is an assignment rule for species mwa6994523_5d45_4000_af0c_3e94073bf183:

$$\begin{aligned} &\text{mwa6994523\_5d45\_4000\_af0c\_3e94073bf183} \\ &\quad = [\text{mw16796ffe\_4764\_4a9f\_942e\_149f42c1cd28}] \\ &\qquad + [\text{mw3d81860d\_d786\_4fcc\_b8bb\_64f1a2d7739d}] \end{aligned} \tag{1}$$

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

6 Reactions

This model contains 117 reactions. All reactions are listed in the following table and are subsequently described in detail. If a reaction is affected by a modifier, the identifier of this species is written above the reaction arrow.

Table 4: Overview of all reactions

№	Id	Name	Reaction Equation	SBO
1	mwa67e40c1-_693d-_4214_adc8-_b2f2b71cef12	r1	mwe2fff28d_182c_4a1c_9882_f17774c0958a + mw93907b2d_53db_4080_9e3f_3eb304441ab9 ⟸ mwe2fff28d_182c_4a1c_9882_f17774c	
2	mw877cd1e3-_b48b-_42e8_ab23-_682dd893fd9d	r2	mw7eacabf9_d68c_491a_aba2_ec0809a8ecc8 + mw7eacabf9_d68c_491a_aba2_ec0809a8ecc8 ⟸ mw7eacabf9_d68c_491a_aba2_ec0809a8	
3	mw413c6d45-_ab23-_4d3e_87b3-_a8ed4629b923	r3	mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3 ⟸ mwa8f2e7b2_0927_4ab4_a817_dddc43b	
4	mwf61e086d-_0345-_4d4c_b91d-_0b105e543d04	r8	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mw3c2e1b43_29ca_491a_93e9_c723a993d6fb ⟸ mwbfcf6773_1915_432c_b1d2_1f2460	
5	mw91f49311-_efdc-_47c6_b8b8-_a619e042d644	r6	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mwe57c3282_5935_405c_8c0b_7fadb7a5de17 ⟸ mwbfcf6773_1915_432c_b1d2_1f2460	

№	Id	Name	Reaction Equation	SBO
6	mw974c39f5-_b82e-_44b3_abec-_7a724f46c526	r9	mw5198d3c2_879c_4f0d_b4f8_cd40efe0b1cf	mw5198d3c2_879c_4f0d_b4f8_cd40efe0
7	mw9544e67b-_b6d0-_4941_b7e0-_ecd4f400a335	r7	mw954e8fcb_ac0a_459d_8878_f19080208a17 mwe57c3282_5935_405c_8c0b_7fadb7a5de17	mw954e8fcb_ac0a_459d_8878_f190802
8	mw486c5261-_3d03-_4589_a1e9-_978b62ad2dfe	r10	mwa98802cb_c977_4fe0_9e67_5000904c2c36 mwa0349407_8187_48fc_9e94_5698ccc4e06d	mwa98802cb_c977_4fe0_9e67_500090
9	mw2cf8a809-_63d8-_4717_91fc-_070516e6f3db	r11	mwa0349407_8187_48fc_9e94_5698ccc4e06d + mwe57c3282_5935_405c_8c0b_7fadb7a5de17	mwa0349407_8187_48fc_9e94_5698cc
10	mweda6a945-_fb5d-_4d99_9958-_11b2b2840308	r12	mwf9999977_6f0e_4e35_9b73_75587f3448e9 mwe57c3282_5935_405c_8c0b_7fadb7a5de17	mwf9999977_6f0e_4e35_9b73_75587f3
11	mwd4bf58ea-_70c9-_43ea_a831-_1fcde130ba28	r13	mwa0349407_8187_48fc_9e94_5698ccc4e06d	mwa0349407_8187_48fc_9e94_5698cc

№	Id	Name	Reaction Equation	SBO
12	mw4817365e-_a33b-_451f_bee1-_de748377ede2	r18	mwa98802cb_c977_4fe0_9e67_5000904c2c36 + mwf430a579_ecbf_48ba_80c2_06e455808f2a ⟺ mwa98802cb_c977_4fe0_9e67_5000904	
13	mw03998474-_934b-_4e4a_8c0c-_ca359e402ac2	r19	mw504578d8_96c3_471f_8a7e_8c14e7535d3d + mwe57c3282_5935_405c_8c0b_7fadb7a5de17 ⟺ mw504578d8_96c3_471f_8a7e_8c14e7	
14	mw7bb43f0a-_c87e-_41ff_8a43-_cdf45c8f05e6	r20	mw45ab688a_6467_4a3e_a779_2118fa84d69e ⟺ mwa0349407_8187_48fc_9e94_5698ccc4e06d + mwf430a579_ecbf_48ba_80c2_06e455808f2a + mwe57c3282_5935_405c_8c0b_7fadb7a5de17	mw45ab688a_6467_4a3e_a779_2118fa8
15	mwd9262331-_e35a-_4614_943a-_89bcf8a492e3	r23	mw504578d8_96c3_471f_8a7e_8c14e7535d3d + mw9dcaa655_a755_426e_a3fa_1ad7c3c45575 ⟺ mw504578d8_96c3_471f_8a7e_8c14e75	
16	mwc5f121dc-_d27d-_4c3d_90f2-_67d0adaf144a	r26	mwf430a579_ecbf_48ba_80c2_06e455808f2a + mw9dcaa655_a755_426e_a3fa_1ad7c3c45575 ⟺ mwf430a579_ecbf_48ba_80c2_06e4558	
17	mw23a29b42-_9813-_4e46_b8ae-_966e3215e6dc	r27	mwa98802cb_c977_4fe0_9e67_5000904c2c36 + mw1093b3af_1864_4ba3_a541_6009a9921282 ⟺ mwa98802cb_c977_4fe0_9e67_500090	
18	mw0e459167-_515b-_4c4d_8b67-_bf0a5b3e9d61	r28	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mwf430a579_ecbf_48ba_80c2_06e455808f2a ⟺ mwbfcf6773_1915_432c_b1d2_1f24609	

№	Id	Name	Reaction Equation	SBO
19	mwc52e0f9b-_1e0c-_46ca_8d18-_f05ef4a080cb	r29	mwd9462e5b_a272_4b66_ab66_fde9266b1a43 + mwe57c3282_5935_405c_8c0b_7fadb7a5de17 ⟺ mwd9462e5b_a272_4b66_ab66_fde926	
20	mw4f89bf6c-_8691-_41a6_a1ac-_13e6aa8c4b93	r30	mw925b938a_fe73_4664_ba6f_e72e57780891 ⟺ mw925b938a_fe73_4664_ba6f_e72e577 mwf430a579_ecbf_48ba_80c2_06e455808f2a + mwe57c3282_5935_405c_8c0b_7fadb7a5de17	
21	mw35f71989-_f89b-_4440_b1a4-_ebc7b4cc18b2	r31	mwd9462e5b_a272_4b66_ab66_fde9266b1a43 + mw9dcaa655_a755_426e_a3fa_1ad7c3c45575 ⟺ mwd9462e5b_a272_4b66_ab66_fde926	
22	mwd0d92dd4-_81b7-_4385_bfd7-_5de82e193ecd	r32	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mw1093b3af_1864_4ba3_a541_6009a9921282 ⟺ mwbfcf6773_1915_432c_b1d2_1f2460	
23	mwbb77e3d6-_6065-_4344_9361-_e30c03514f4e	r35	mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21 + mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf ⟺ mwfbda4e09_0cbb_49bc_ae69_f88b7a7	
24	mw921ee820-_1dbb-_4b5f_866c-_87da620d8f89	r39	mwa54a9c38_c98b_45e5_8432_4119fb777e44 ⟺ mwa54a9c38_c98b_45e5_8432_4119fb	
25	mw0bcfad86-_59b9-_42ff_bcb7-_fbb44845049d	r36	mwf40d6176_abfc_4a30_886f_83a19fcffc48 ⟺ mwf40d6176_abfc_4a30_886f_83a19fcffc mwa54a9c38_c98b_45e5_8432_4119fb777e44	

№	Id	Name	Reaction Equation	SBO
26	mwe9b50ac7-_dac3-_4eba_b1db-_b3fd392d8fb7	r38	mw28464aad_8013_4a23_ae09_a406954859a6 mwa54a9c38_c98b_45e5_8432_4119fb777e44	mw28464aad_8013_4a23_ae09_a40695
27	mw934c3638-_603e-_4ff0_a763-_68f9405fa01f	r37	mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6 + mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	mwf8cc7834_bf4f_4ccd_8235_d0890bad
28	mw3c617363-_649b-_4460_a694-_36f7a3127a62	r40	mwa54a9c38_c98b_45e5_8432_4119fb777e44 + mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	mwa54a9c38_c98b_45e5_8432_4119fb7
29	mwf31259aa-_32b7-_4104_be70-_045297b9a512	r41	mwdf82303e_323f_4c51_a858_56a59233cd98 mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	mwdf82303e_323f_4c51_a858_56a5923
30	mw0a51fbf0-_409b-_4b45_b4ac-_0220af4c4e3c	r42	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	mwbfcf6773_1915_432c_b1d2_1f24609
31	mw33baddbd-_a23f-_45bb_b126-_0ba60bbf6c53	r43	mwd39388fd_4f85_4d1c_b2a3_37857c595a2d + mwa54a9c38_c98b_45e5_8432_4119fb777e44	mwd39388fd_4f85_4d1c_b2a3_37857c
32	mw652570eb-_c9d3-_499b_b877-_61d360b10980	r44	mwd7bf31ba_b05c_4c45_bb2f_6a2468a2a507 mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	mwd7bf31ba_b05c_4c45_bb2f_6a2468a

№	Id	Name	Reaction Equation	SBO
33	mwc5aae1f8-_52e4-_4bcd_b044-_3768f90b7b19	r45	mwd39388fd_4f85_4d1c_b2a3_37857c595a2d + mwe57c3282_5935_405c_8c0b_7fadb7a5de17 ⟺ mwd39388fd_4f85_4d1c_b2a3_37857c	
34	mw642ac312-_2ee7-_4e66_8f3e-_e2da2bb6412a	r46	mwbf5cb039_b830_4282_aa22_a3dda6272ec1 ⟺ mwbf5cb039_b830_4282_aa22_a3dda62 mw7cff9a0e_094d_498e_bf7f_7b162c61d63a + mwe57c3282_5935_405c_8c0b_7fadb7a5de17	
35	mw584a64d0-_560a-_4297_9882-_80cb4eff73f3	r47	mw66ac98c4_7e7b_4071_954d_43eb17584220 + mwa54a9c38_c98b_45e5_8432_4119fb777e44 ⟺ mw66ac98c4_7e7b_4071_954d_43eb17	
36	mw42c97708-_4f85-_45a8_9141-_d0ae529409ca	r48	mw83de7813_4941_45a6_a320_a551165bf22a ⟺ mw83de7813_4941_45a6_a320_a5511 mwa54a9c38_c98b_45e5_8432_4119fb777e44	
37	mwaa65a34e-_fabf-_4d6d_ae0b-_f1d08b068f33	r49	mwaff92910_ed3d_40b9_a29c_e4866167e828 + mw0834731b_0477_4217_a53b_30cef851191b ⟺ mwaff92910_ed3d_40b9_a29c_e48661	
38	mw1bd186cf-_4762-_480a_b70d-_d7a775462398	r50	mw4628f984_eb87_4922_9760_4975095ce6eb ⟺ mw4628f984_eb87_4922_9760_497509 mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28	
39	mwf5573ddf-_ad7f-_478a_a784-_557a9cddaaf2	r51	mwaff92910_ed3d_40b9_a29c_e4866167e828 + mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28 ⟺ mwaff92910_ed3d_40b9_a29c_e486616	

№	Id	Name	Reaction Equation	SBO
40	mwb49058ff-_2997-_4187_abe7-_4dce4ccf6ff4	r52	mw12ba4000_d452_420c_be63_96d2848aca32 ⟷ mwf816df4c_4593_4d23_990f_0d7c15ddde5d	mw12ba4000_d452_420c_be63_96d284
41	mw8301b154-_9463-_4516_b4c5-_c8f8b68691fe	r53	mwf816df4c_4593_4d23_990f_0d7c15ddde5d + mw7e23b961_186b_47a0_a8b5_5e9957766792 ⟶	mwf816df4c_4593_4d23_990f_0d7c15
42	mwf95f743d-_6108-_49fe_8ffd-_bdcc1a9f9a8d	r54	mwcedf8ecd_67bd_4b91_aa04_d58782dec2a4 ⟷ mwcc894c94_0ddf_42cc_913e_cdcc4d471d94	mwcedf8ecd_67bd_4b91_aa04_d58782d
43	mw51d9d6b8-_f0c0-_4763_9d11-_9be61b5cf5c9	r55	mwf816df4c_4593_4d23_990f_0d7c15ddde5d + mwcc894c94_0ddf_42cc_913e_cdcc4d471d94 ⟶	mwf816df4c_4593_4d23_990f_0d7c15d
44	mw6fd24d16-_f57d-_46c6_82f5-_3f00759fa16b	r56	mw6cb74b27_ffef_49bb_8ffb_622d552caa9e ⟷ mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	mw6cb74b27_ffef_49bb_8ffb_622d552ca
45	mw9c208e18-_c70d-_4231_af0b-_ad17cd0bba2d	r57	mwaff92910_ed3d_40b9_a29c_e4866167e828 + mwbaaeb210_4806_4076_9d60_219f4ed945b6 ⟶	mwaff92910_ed3d_40b9_a29c_e48661
46	mw87711dc1-_43d7-_40fc_b9e9-_a24e2f92419d	r58	mw19a33ad5_5ba4_46c7_84eb_c1287f02bcd5 ⟷ mwbaaeb210_4806_4076_9d60_219f4ed945b6	mw19a33ad5_5ba4_46c7_84eb_c1287f0

№	Id	Name	Reaction Equation	SBO
47	mw4b445876-_bdce-_42d0_867b-_fd3c74128a6b	r59	mwf816df4c_4593_4d23_990f_0d7c15ddde5d + mwf9e2a044_7774_400b_a74e_a111b4a21f30 ⟺ mwf816df4c_4593_4d23_990f_0d7c15d	
48	mw40950d59-_1012-_4361_8418-_73e25758e367	r60	mwcb572fe2_c3ac_40e7_8141_da7d55fce18a → mwf9e2a044_7774_400b_a74e_a111b4a21f30	mwcb572fe2_c3ac_40e7_8141_da7d55fc
49	mwbfa79c95-_487d-_4c6f_b437-_9e579451a419	r61	mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28 + mwf9e2a044_7774_400b_a74e_a111b4a21f30 ⟺ mw9b25f809_18a1_4c14_8f4b_cf18e6d	
50	mwa4b69c77-_6226-_46da_b78c-_3e6027d0be41	r62	mwa0acc0ac_5fac_4a42_a3be_e36db44994b0 → mwf9e2a044_7774_400b_a74e_a111b4a21f30	mwa0acc0ac_5fac_4a42_a3be_e36db449
51	mwf8bb22e2-_5aa3-_4c25_a022-_a266b1856a48	r63	mwd784228d_0cb5_468a_ac70_02d8f04b3d9c + mwd087f76b_65dc_47f1_ba21_c43774457686 ⟺ mwd784228d_0cb5_468a_ac70_02d8f0	
52	mw61305f93-_7b2d-_4a2d_8d16-_f7be026d8671	r64	mwa7e3103a_6394_472c_b0f4_8ed527f68604 → mwd087f76b_65dc_47f1_ba21_c43774457686	mwa7e3103a_6394_472c_b0f4_8ed527f
53	mwcc31b497-_6c50-_446c_bbc2-_6c5739507252	r66	mw35f5adaa_d1c0_433c_817d_76e317f4cb15 → mwd087f76b_65dc_47f1_ba21_c43774457686	mw35f5adaa_d1c0_433c_817d_76e317f

№	Id	Name	Reaction Equation	SBO
54	mw1d8c2435-_bb85-_4352_a25f-_82033250579e	r65	mwcc894c94_0ddf_42cc_913e_cdcc4d471d94 + mwd087f76b_65dc_47f1_ba21_c43774457686 ⟺ mwcc894c94_0ddf_42cc_913e_cdcc4d4	
55	mw8dec1159-_1925-_45d9_af25-_3cb709a5017c	r67	mwd784228d_0cb5_468a_ac70_02d8f04b3d9c + mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21 ⟺ mwd784228d_0cb5_468a_ac70_02d8f04	
56	mwcf9f1b1d-_e19a-_4fa8_85ba-_8f17e2cec730	r68	mw5babe3d5_a9af_4dfd_ac01_35474ef64af2 ⟺ mw5babe3d5_a9af_4dfd_ac01_35474ef64	
			mwbfcf6773_1915_432c_b1d2_1f246094cc74	+
			mwa0349407_8187_48fc_9e94_5698ccc4e06d	+
			mwf430a579_ecbf_48ba_80c2_06e455808f2a	+
			mw31ac308f_da36_4f73_830f_67f3e5b945d9	
57	mwa5c135b4-_77e2-_4411_98e1-_2000c39d4b30	r69	mwd784228d_0cb5_468a_ac70_02d8f04b3d9c + mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6 ⟺ mwd784228d_0cb5_468a_ac70_02d8f04	
58	mw4685274a-_2b55-_429f_927f-_3fd863592af6	r70	mw31261227_9cd6_4059_a0bb_04dbf4888080 ⟺ mw31261227_9cd6_4059_a0bb_04dbf4	
			mwbfcf6773_1915_432c_b1d2_1f246094cc74	+
			mwf430a579_ecbf_48ba_80c2_06e455808f2a	+
			mw31ac308f_da36_4f73_830f_67f3e5b945d9	
59	mw8e331e43-_16b4-_478d_880b-_d5a3244540e4	r71	mw31ac308f_da36_4f73_830f_67f3e5b945d9 ⟺ mw31ac308f_da36_4f73_830f_67f3e5b9	

№	Id	Name	Reaction Equation	SBO
60	mw47dee769-_daa0-_4af4_978a-_5ab17e504c2f	r72	mw0a0ca6ba_cb28_44c7_a0c0_1593cb720966	mw0a0ca6ba_cb28_44c7_a0c0_1593cb
61	mwbd8a133e-_1b70-_44e8_bef8-_78b14141166b	r73	mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21 + mw19122f7d_f92e_4dc0_922f_6b681db65b0b	mwfbda4e09_0cbb_49bc_ae69_f88b7a7
62	mw3a87ca5a-_845d-_4ac4_8806-_e343cbbfc630	r74	mwb1bc2058_e6d8_4680_9e6c_d27bb366cde0 + mwb2366216_0b3c_4f28_8303_fec92c68dd57	mwb1bc2058_e6d8_4680_9e6c_d27bb3
63	mw363a5271-_1f51-_4d5e_87a7-_42ea25cb5657	r75	mw06b8aada_c92a_48eb_8ee7_af3778cfe62f	mw06b8aada_c92a_48eb_8ee7_af3778cfe
			mw1093b3af_1864_4ba3_a541_6009a9921282 +	
			mwb2366216_0b3c_4f28_8303_fec92c68dd57 +	
			mwa0349407_8187_48fc_9e94_5698ccc4e06d	
64	mw6bee0112-_92dc-_4169_9109-_2633772b3aa4	r76	mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6 + mw19122f7d_f92e_4dc0_922f_6b681db65b0b	mwf8cc7834_bf4f_4ccd_8235_d0890ba
65	mwbac9e6ff-_2df1-_45eb_b3f4-_4cae74c64014	r77	mw481cd12b_61ba_44e5_93bf_8b88c6c4a4e7 + mwb2366216_0b3c_4f28_8303_fec92c68dd57	mw481cd12b_61ba_44e5_93bf_8b88c6
66	mweb93165f-_cf03-_48f1_b035-_59d79e324314	r78	mw1d5948e7_5504_4224_9d71_227911b4f1ee	mw1d5948e7_5504_4224_9d71_22791
			mw1093b3af_1864_4ba3_a541_6009a9921282 +	
			mwb2366216_0b3c_4f28_8303_fec92c68dd57	

№	Id	Name	Reaction Equation	SBO
67	mw85e457d1-_73f8-_4236_bb61-_a128d300003f	r79	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mw19122f7d_f92e_4dc0_922f_6b681db65b0b ⟺ mwbfcf6773_1915_432c_b1d2_1f24609	
68	mw6b159c8f-_eee0-_4337_b711-_2e230c9e2cf6	r80	mwec1b368b_8f73_47eb_9636_9956389836eb + mwb2366216_0b3c_4f28_8303_fec92c68dd57 ⟺ mwec1b368b_8f73_47eb_9636_995638	
69	mwc9b3b248-_3290-_452a_9b7c-_8fdada3e6687	r81	mwa455ec7e_1a12_4659_95a2_a5695d09ca60 ⟺ mwa455ec7e_1a12_4659_95a2_a5695d0 mwb2366216_0b3c_4f28_8303_fec92c68dd57	
70	mw77484632-_4e33-_468a_9937-_24e9bfd0e17d	r82	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mw2ba1db9a_4483_44fa_a3a2_b4a5ea66898c ⟺ mwbfcf6773_1915_432c_b1d2_1f24609	
71	mw2c5858f3-_0988-_49b0_a94a-_057853b84e91	r83	mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5 ⟺ mw0dc4e5eb_4366_4799_bebc_cfcffe5c0	
72	mwd3a36af9-_3ccc-_4bb1_9867-_3b9823ba4ac8	r84	mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5 ⟺ mw0dc4e5eb_4366_4799_bebc_cfcffe5c0 mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c	
73	mw9f000f29-_2512-_4d4a_9dd9-_e59aaf296d31	r85	mwfc4a9c3d_3ebb_4033_8b7d_f4d7613d2078 + mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c ⟺ mwfc4a9c3d_3ebb_4033_8b7d_f4d7613	

№	Id	Name	Reaction Equation	SBO
74	mw837b5ad7-_4a8c-_4c55_94ff-_0fdd63048044	r86	mwbd6bb050_89bd_41df_8cea_d2e1fb77bafe	mwbd6bb050_89bd_41df_8cea_d2e1fb7
75	mwd15926b3-_069a-_4b16_a6fc-_c0c15083d621	r87	mw7033dfd6_53c5_433b_a132_f8cb34dea20f mw2ba1db9a_4483_44fa_a3a2_b4a5ea66898c	mw7033dfd6_53c5_433b_a132_f8cb34d
76	mw3a5e0932-_d50f-_4fe6_b8cb-_0ad649f305b0	r88	mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c + mwb561d9f3_a9ed_4bdb_8d40_87be5cc3237a	mw78e207c4_4faf_4b48_8e22_1ee666e
77	mw5dcc8719-_3180-_4bd0_8797-_08e256131961	r89	mw014cc419_b720_4b90_9192_2ec6e706c87d mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	mw014cc419_b720_4b90_9192_2ec6e7
78	mw376b0685-_ef73-_4fcc_94af-_2ada24cf8a8b	r90	mwcef73e0e_d195_4077_ae71_723664ee1602 + mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	mwcef73e0e_d195_4077_ae71_723664e
79	mwcc7cfa9c-_4945-_403a_938e-_b237c371a5ef	r91	mw62bf5275_ce02_4e86_b3b6_3f87a335e1de + mw6e01967b_3e2a_433d_bec6_9f9cf3ba243c	mw62bf5275_ce02_4e86_b3b6_3f87a33

№	Id	Name	Reaction Equation	SBO
80	mw98da32e0-_b061-_40c5_9d32-_40744134f3fa	r92	mw6353aa36_d4a4_4254_8a1f_1f7f571d4233	mw6353aa36_d4a4_4254_8a1f_1f7f571
81	mw31369230-_1f14-_45bd_be02-_a44a275c6e31	r93	mwc1935afc_56b1_4a87_923c_ae6d82455d80 ⇌ mw6e01967b_3e2a_433d_bec6_9f9cf3ba243c	mwc1935afc_56b1_4a87_923c_ae6d824
82	mw12311a84-_3f8d-_40c6_8b14-_961a8a58d1b6	r94	mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d ⇌ mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	mw3d81860d_d786_4fcc_b8bb_64f1a2
83	mwf3d393e9-_ae09-_4eab_a39a-_ed0eef0f54bc	r95	mwa6e82fc9_a0ce_461c_93c8_17f3c807c1a1	mwa6e82fc9_a0ce_461c_93c8_17f3c807
84	mw2698f402-_d00b-_451e_8b22-_93a322fe9a92	r96	mw236a3250_4c96_4f6e_b94c_ab3d12852801 ⇌ mw11a8b702_b8ac_4513_b4aa_063e51089812	mw236a3250_4c96_4f6e_b94c_ab3d12
85	mw028e8b3e-_b531-_4466_9c3a-_e3fcf7fc9be9	r97	mw16796ffe_4764_4a9f_942e_149f42c1cd28 + mw11a8b702_b8ac_4513_b4aa_063e51089812 ⇌	mw16796ffe_4764_4a9f_942e_149f42c

№	Id	Name	Reaction Equation	SBO
86	mwc5e0c166-_6a3a-_4913_9ed1-_dafe97bdb371	r98	mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d + mw11a8b702_b8ac_4513_b4aa_063e51089812 ⇌ mw3d81860d_d786_4fcc_b8bb_64f1a2	
87	mw94b3bae0-_4da9-_4358_a5ac-_a46a5cbf621b	r99	mw1a0cb97a_b657_430b_963c_92217f643081 ⇌ mw1a0cb97a_b657_430b_963c_92217f	
88	mw362ca1b3-_224a-_42fb_a14b-_6ff467748a5e	r100	mw9b937ca3_0d82_46d5_8f5a_0f9701002797 ⇌ mw11a8b702_b8ac_4513_b4aa_063e51089812	mw9b937ca3_0d82_46d5_8f5a_0f9701
89	mw3994e898-_7232-_4b70_9c58-_b3476e8655f5	r101	mwc1935afc_56b1_4a87_923c_ae6d82455d80 + mw11a8b702_b8ac_4513_b4aa_063e51089812 ⇌ mwc1935afc_56b1_4a87_923c_ae6d82	
90	mw75acd2d1-_3fdf-_4c3f_8d99-_6d62f825d5e2	r102	mw57a44eb0_ace7_4294_905a_219e87d3c281 ⇌ mw57a44eb0_ace7_4294_905a_219e87	
91	mw4a334f7d-_9bce-_4690_b623-_a427ed66a174	r103	mwd746a5d5_5e65_4a4c_9f84_0e4a3cb7d2fc ⇌ mw11a8b702_b8ac_4513_b4aa_063e51089812	mwd746a5d5_5e65_4a4c_9f84_0e4a3cb

№	Id	Name	Reaction Equation	SBO
92	mw950485f2-_4463-_4309_a4e4-_cc81d16ffb7f	r104	mwaff92910_ed3d_40b9_a29c_e4866167e828	mwa6994523_5d45_4000_af0c_3e94073
93	mw62f71309-_e066-_47d2_9b99-_01f78a51c218	r105	mwdf92bdc0_f426_45b0_9ad0_876521f41312	mwdf92bdc0_f426_45b0_9ad0_876521f
94	mwe8647e48-_f4a9-_40f4_9b32-_f89ded572e01	r106	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mw13abe2a6_9905_40e5_8c23_3fc8834b572a	mwbfcf6773_1915_432c_b1d2_1f2460
95	mw65b9e026-_bc6c-_4c94_8b37-_8b9acdf50c8a	r107	mw2fd710a6_7fe2_4484_bca6_59c187bade8b	mw2fd710a6_7fe2_4484_bca6_59c187b
			mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	
96	mw1c9d29fa-_bff4-_4d2f_9d5f-_f1791e4882a3	r108	mwbfcf6773_1915_432c_b1d2_1f246094cc74 + mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	mwbfcf6773_1915_432c_b1d2_1f24609
97	mwad97bd5a-_3dae-_49d9_990b-_2e6574740618	r109	mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af + mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	mwb6a9aa2c_62e7_410f_9c33_dbe36dfc

№	Id	Name	Reaction Equation	SBO
98	mwe9988e4a-_083c-_4f8e_b154-_3e599c9307b0	r110	mwdc34472c_a6f9_4002_951d_e0e8da64eb42 ⟷ mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	mwdc34472c_a6f9_4002_951d_e0e8da6
99	mwf8bacf1a-_6c1a-_49b6_b344-_2d3bd404a735	r111	mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af + mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af ⟷	mwb6a9aa2c_62e7_410f_9c33_dbe36dfc
100	mwc9b945cf-_3a14-_4bd9_b253-_7064498c75e2	r112	mw4f575c55_7dff_45d7_94ad_cda9621d5b63 + mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09 ⟷	mw4f575c55_7dff_45d7_94ad_cda9621d5
101	mw75c6078f-_fb76-_4ca9_9fdd-_e221e3ba57ad	r113	mw472d5cb9_120e_4f60_bbae_1ae2552837dd ⟷ mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	mw472d5cb9_120e_4f60_bbae_1ae255
102	mw177fa7b0-_f0be-_4c3e_8b47-_2ac4e13159a2	r114	mw13abe2a6_9905_40e5_8c23_3fc8834b572a + mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af ⟷	mw13abe2a6_9905_40e5_8c23_3fc8834
103	mwec4127b5-_6bcf-_4128_aff4-_a6b3c470f690	r115	mw4f575c55_7dff_45d7_94ad_cda9621d5b63 ⟷	mw4f575c55_7dff_45d7_94ad_cda9621c
104	mw5c806b00-_59a1-_491e_99a1-_2c932b2d5d7a	r116	mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664 + mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664 ⟷	mwe3fd7f65_b0d1_44d9_b6f3_d2f7d33

№	Id	Name	Reaction Equation	SBO
105	mw26fdabae-_323b-_4a78_b134-_4c2eb70ea6a7	r117	mw4110f531_7513_4786_8896_7c9d969ff558 + mw0e1be972_fded_4bff_a93d_091ec942485f ⟺ mw4110f531_7513_4786_8896_7c9d969	
106	mw3b0c171c-_6d60-_41ca_8193-_83cd5e6c188c	r118	mw0facb8f2_95cf_4ddf_a959_b24ba64f320b mw0e1be972_fded_4bff_a93d_091ec942485f ⟶ mw0facb8f2_95cf_4ddf_a959_b24ba64f3	
107	mwc38a99c8-_74cf-_49f2_a16b-_f6610ca1a0a7	r119	mw960bddeb_e567_46dd_b2f3_ed5e6a5c7972 + mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664 ⟺ mw960bddeb_e567_46dd_b2f3_ed5e6a5	
108	mw45d92b79-_0656-_4795_87d0-_7a465949ca43	r120	mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664 + mw0e1be972_fded_4bff_a93d_091ec942485f ⟺ mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332	
109	mwb71945c2-_03a8-_4fad_a995-_e1caeee98525	r121	mw8c85ff7f_6368_4b11_a2ed_ce83481b55e6 mw0e1be972_fded_4bff_a93d_091ec942485f ⟶ mw8c85ff7f_6368_4b11_a2ed_ce83481b	
110	mwd189238c-_e8f9-_40be_b4ea-_18a42bba1b4f	r122	mw960bddeb_e567_46dd_b2f3_ed5e6a5c7972 ⟶ mw960bddeb_e567_46dd_b2f3_ed5e6a	
111	mw52a97dfa-_4e16-_4604_98ec-_72a9b405ad2d	r123	mwd7f41594_8377_4e2e_9528_45d5a82ffdb4 ⟶ mwd7f41594_8377_4e2e_9528_45d5a82	

№	Id	Name	Reaction Equation	SBO
112	mw0fbf73ac-_8427-_4a8c_9b0e-_c51676638be4	r124	mw2fd710a6_7fe2_4484_bca6_59c187bade8b + mw19122f7d_f92e_4dc0_922f_6b681db65b0b ⟺ mw2fd710a6_7fe2_4484_bca6_59c187b	
113	mw2146635b-_dc09-_44be_97f3-_940933f38925	r125	mw9da19d39_6d91_41d0_b101_f7748391705a + mwb2366216_0b3c_4f28_8303_fec92c68dd57 ⟺ mw9da19d39_6d91_41d0_b101_f77483	
114	mw3eaece15-_c282-_46e1_baad-_ab56a5664619	r126	mw741407c8_029b_44ed_9799_02eb9d90ec9a → mw741407c8_029b_44ed_9799_02eb9c mw19122f7d_f92e_4dc0_922f_6b681db65b0b + mwb2366216_0b3c_4f28_8303_fec92c68dd57	
115	mw3cf723f4-_c4fe-_46e2_87e1-_bab6a91d4583	r127	mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5 + mw19122f7d_f92e_4dc0_922f_6b681db65b0b ⟺ mw0dc4e5eb_4366_4799_bebc_cfcffe5c	
116	mwd46c52b2-_27ca-_4fe0_9c59-_04167b0db92a	r128	mwbedcc124_dbf3_41ab_989e_6b0900d7590a + mwb2366216_0b3c_4f28_8303_fec92c68dd57 ⟺ mwbedcc124_dbf3_41ab_989e_6b0900	
117	mw8453434c-_1b7f-_429e_8902-_ca15dc0ba9e1	r129	mw71d03aab_fcb6_4f78_a788_48f183d0b931 → mw71d03aab_fcb6_4f78_a788_48f183d0 mwb2366216_0b3c_4f28_8303_fec92c68dd57	

6.1 Reaction mwa67e40c1_693d_4214_adc8_b2f2b71cef12

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

Name r1

Reaction equation

$$\text{mwe2fff28d\_182c\_4a1c\_9882\_f17774c0958a} + \text{mw93907b2d\_53db\_4080\_9e3f\_3eb304441ab9} \underset{(2)}{\rightleftharpoons} \text{mwe2fff28d\_182c\_4a}$$

Reactants

Table 5: Properties of each reactant.

Id	Name	SBO
mwe2fff28d_182c_4a1c_9882_f17774c0958a	EGF	
mw93907b2d_53db_4080_9e3f_3eb304441ab9	EGFR	

Modifiers

Table 6: Properties of each modifier.

Id	Name	SBO
mwe2fff28d_182c_4a1c_9882_f17774c0958a	EGF	
mw93907b2d_53db_4080_9e3f_3eb304441ab9	EGFR	
mw7eacabf9_d68c_491a_aba2_ec0809a8ecc8	EGF-EGFR	

Product

Table 7: Properties of each product.

Id	Name	SBO
mw7eacabf9_d68c_491a_aba2_ec0809a8ecc8	EGF-EGFR	

Kinetic Law

Derived unit contains undeclared units

$$
\begin{aligned}
v_1 = {} & \text{mw575f7f49\_3663\_47f1\_b492\_5b92c1c4345d} \\
& \cdot [\text{mwe2fff28d\_182c\_4a1c\_9882\_f17774c0958a}] \\
& \cdot [\text{mw93907b2d\_53db\_4080\_9e3f\_3eb304441ab9}] \\
& - \text{mw53c64fd3\_9a1c\_4947\_a734\_74a73554964c} \\
& \cdot [\text{mw7eacabf9\_d68c\_491a\_aba2\_ec0809a8ecc8}]
\end{aligned} \tag{3}
$$

Table 8: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw575f7f49-_3663-_47f1_b492-_5b92c1c4345d	k1		100.000		☑
mw53c64fd3-_9a1c-_4947_a734-_74a73554964c	k1r		0.004		☑

6.2 Reaction mw877cd1e3_b48b_42e8_ab23_682dd893fd9d

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

Name r2

Reaction equation

$$
\text{mw7eacabf9\_d68c\_491a\_aba2\_ec0809a8ecc8} + \text{mw7eacabf9\_d68c\_491a\_aba2\_ec0809a8ecc8} \rightleftharpoons \text{mw7eacabf9\_d68c\_491} \tag{4}
$$

Reactants

Table 9: Properties of each reactant.

Id	Name	SBO
mw7eacabf9_d68c_491a_aba2_ec0809a8ecc8	EGF-EGFR	
mw7eacabf9_d68c_491a_aba2_ec0809a8ecc8	EGF-EGFR	

Modifiers

Table 10: Properties of each modifier.

Id	Name	SBO
mw7eacabf9_d68c_491a_aba2_ec0809a8ecc8	EGF-EGFR	
mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3	EGF-EGFR2	

Product

Table 11: Properties of each product.

Id	Name	SBO
mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3	EGF-EGFR2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_2 = {} & \text{mw8cfaf07f\_dabe\_45de\_93cc\_ef2c7fd31104} \\ & \cdot [\text{mw7eacabf9\_d68c\_491a\_aba2\_ec0809a8ecc8}] \\ & \cdot [\text{mw7eacabf9\_d68c\_491a\_aba2\_ec0809a8ecc8}] \\ & - \text{mwab52aceb\_4b19\_4317\_b2da\_97ccbb973dab} \\ & \cdot [\text{mwa8f2e7b2\_0927\_4ab4\_a817\_dddc43bb4fa3}] \end{aligned} \tag{5}$$

Table 12: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw8cfaf07f-_dabe-_45de_93cc-_ef2c7fd31104	k2		10.00		☑
mwab52aceb-_4b19-_4317_b2da-_97ccbb973dab	k2r		0.02		☑

6.3 Reaction mw413c6d45_ab23_4d3e_87b3_a8ed4629b923

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

Name r3

Reaction equation

$$\text{mwa8f2e7b2\_0927\_4ab4\_a817\_dddc43bb4fa3} \xrightarrow{\text{mwa8f2e7b2\_0927\_4ab4\_a817\_dddc43bb4fa3}} \text{mwbfcf6773\_1915\_432} \tag{6}$$

Reactant

Table 13: Properties of each reactant.

Id	Name	SBO
mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3	EGF-EGFR2	

Modifier

Table 14: Properties of each modifier.

Id	Name	SBO
mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3	EGF-EGFR2	

Product

Table 15: Properties of each product.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	

Kinetic Law

Derived unit contains undeclared units

$$v_3 = \frac{\text{mw4004c2ca\_d3cb\_488e\_bb79\_1f4e40f0b15a} \cdot [\text{mwa8f2e7b2\_0927\_4ab4\_a817\_dddc43bb4fa3}]}{\text{mwe49b9910\_4a74\_4658\_9b34\_ce41c0d89825} + [\text{mwa8f2e7b2\_0927\_4ab4\_a817\_dddc43bb4fa3}]} \tag{7}$$

Table 16: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw4004c2ca-_d3cb-_488e_bb79-_1f4e40f0b15a	vmax		0.24		☑
mwe49b9910-_4a74-_4658_9b34-_ce41c0d89825	km		13.00		☑

6.4 Reaction mwf61e086d_0345_4d4c_b91d_0b105e543d04

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

Name r8

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mw3c2e1b43\_29ca\_491a\_93e9\_c723a993d6fb} \rightleftharpoons \text{mwbfcf6773\_1915\_4} \quad (8)$$

Reactants

Table 17: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw3c2e1b43_29ca_491a_93e9_c723a993d6fb	Shc	

Modifiers

Table 18: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw3c2e1b43_29ca_491a_93e9_c723a993d6fb	Shc	
mw5198d3c2_879c_4f0d_b4f8_cd40efe0b1cf	pEGF-EGFR2-Shc	

Product

Table 19: Properties of each product.

Id	Name	SBO
mw5198d3c2_879c_4f0d_b4f8_cd40efe0b1cf	pEGF-EGFR2-Shc	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_4 = {} & \text{mwf1697f55\_a3f4\_4fb6\_ae1d\_f96f09ad1daa} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mw3c2e1b43\_29ca\_491a\_93e9\_c723a993d6fb}] \\ & - \text{mw880a5942\_7549\_4466\_bd19\_0e1768a3a533} \\ & \cdot [\text{mw5198d3c2\_879c\_4f0d\_b4f8\_cd40efe0b1cf}] \end{aligned} \tag{9}$$

Table 20: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwf1697f55_a3f4_4fb6_ae1d_f96f09ad1daa	k8		90.0		☑
mw880a5942_7549_4466_bd19_0e1768a3a533	k8r		0.6		☑

6.5 Reaction mw91f49311_efdc_47c6_b8b8_a619e042d644

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

Name r6

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17} \rightleftharpoons \text{mwbfcf6773\_1915\_4} \tag{10}$$

Reactants

Table 21: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Modifiers

Table 22: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	
mw954e8fcb_ac0a_459d_8878_f19080208a17	pEGF-EGFR2-SHP2	

Product

Table 23: Properties of each product.

Id	Name	SBO
mw954e8fcb_ac0a_459d_8878_f19080208a17	pEGF-EGFR2-SHP2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_5 = {} & \text{mw7e889122\_d26c\_4d09\_bae4\_d313b992dc8e} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17}] \\ & - \text{mwff6f49f7\_268a\_4f08\_8d36\_3ad8449d7472} \\ & \cdot [\text{mw954e8fcb\_ac0a\_459d\_8878\_f19080208a17}] \end{aligned} \tag{11}$$

Table 24: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw7e889122-_d26c-_4d09_bae4-_d313b992dc8e	k6		3.114		☑

Id	Name	SBO	Value	Unit	Constant
mwff6f49f7-_268a-_4f08_8d36-_3ad8449d7472	k6r		0.200		☑

6.6 Reaction mw974c39f5_b82e_44b3_abec_7a724f46c526

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

Name r9

Reaction equation

$$\text{mw5198d3c2\_879c\_4f0d\_b4f8\_cd40efe0b1cf} \xrightarrow{\text{mw5198d3c2\_879c\_4f0d\_b4f8\_cd40efe0b1cf}} \text{mwa98802cb\_c977\_4fe0\_} \quad (12)$$

Reactant

Table 25: Properties of each reactant.

Id	Name	SBO
mw5198d3c2_879c_4f0d_b4f8_cd40efe0b1cf	pEGF-EGFR2-Shc	

Modifier

Table 26: Properties of each modifier.

Id	Name	SBO
mw5198d3c2_879c_4f0d_b4f8_cd40efe0b1cf	pEGF-EGFR2-Shc	

Product

Table 27: Properties of each product.

Id	Name	SBO
mwa98802cb_c977_4fe0_9e67_5000904c2c36	pEGF-EGFR2-pShc	

Kinetic Law

Derived unit contains undeclared units

$$v_6 = \text{mwe645e76e\_bb00\_4c22\_b25e\_a2e77a6aada2} \cdot [\text{mw5198d3c2\_879c\_4f0d\_b4f8\_cd40efe0b3cf}] \quad (13)$$

Table 28: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe645e76e-_bb00-_4c22_b25e-_a2e77a6aada2	k9		0.584		☑

6.7 Reaction mw9544e67b_b6d0_4941_b7e0_ecd4f400a335

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

Name r7

Reaction equation

$$\text{mw954e8fcb\_ac0a\_459d\_8878\_f19080208a17} \xrightarrow{\text{mw954e8fcb\_ac0a\_459d\_8878\_f19080208a17}} \text{mwa8f2e7b2\_0927\_4ab} \quad (14)$$

Reactant

Table 29: Properties of each reactant.

Id	Name	SBO
mw954e8fcb_ac0a_459d_8878_f19080208a17	pEGF-EGFR2-SHP2	

Modifier

Table 30: Properties of each modifier.

Id	Name	SBO
mw954e8fcb_ac0a_459d_8878_f19080208a17	pEGF-EGFR2-SHP2	

Products

Table 31: Properties of each product.

Id	Name	SBO
mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3	EGF-EGFR2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Kinetic Law

Derived unit contains undeclared units

$$v_7 = \text{mwb0744746\_88a2\_488e\_a483\_266747a044c6} \cdot [\text{mw954e8fcb\_ac0a\_459d\_8878\_f19080208a17}] \tag{15}$$

Table 32: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwb0744746-_88a2-_488e_a483-_266747a044c6	k7		0.266		☑

6.8 Reaction mw486c5261_3d03_4589_a1e9_978b62ad2dfe

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

Name r10

Reaction equation

$$\text{mwa98802cb\_c977\_4fe0\_9e67\_5000904c2c36} \rightleftharpoons \text{mwa98802cb\_c977\_4fe0\_9e67\_5000904c2c36, mwbfcf6773\_1915\_43} \tag{16}$$

Reactant

Table 33: Properties of each reactant.

Id	Name	SBO
mwa98802cb_c977_4fe0_9e67_5000904c2c36	pEGF-EGFR2-pShc	

Modifiers

Table 34: Properties of each modifier.

Id	Name	SBO
mwa98802cb_c977_4fe0_9e67_5000904c2c36	pEGF-EGFR2-pShc	
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	

Products

Table 35: Properties of each product.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_8 = {} & \text{mw9e24066c\_51a5\_4c7a\_af7c\_4656155a4eb0} \\ & \cdot [\text{mwa98802cb\_c977\_4fe0\_9e67\_5000904c2c36}] \\ & - \text{mwab1ef4d4\_2acc\_4fa2\_b07c\_fac51fb7bfaf} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mwa0349407\_8187\_48fc\_9e94\_5698ccc4e06d}] \end{aligned} \tag{17}$$

Table 36: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw9e24066c-_51a5-_4c7a_af7c-_4656155a4eb0	k10		4.481		☑
mwab1ef4d4-_2acc-_4fa2_b07c-_fac51fb7bfaf	k10r		0.300		☑

6.9 Reaction mw2cf8a809_63d8_4717_91fc_070516e6f3db

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

Name r11

Reaction equation

$$\text{mwa0349407\_8187\_48fc\_9e94\_5698ccc4e06d} + \text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17} \rightleftharpoons \text{mwa0349407\_8187\_} \tag{18}$$

Reactants

Table 37: Properties of each reactant.

Id	Name	SBO
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Modifiers

Table 38: Properties of each modifier.

Id	Name	SBO
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	
mwf9999977_6f0e_4e35_9b73_75587f3448e9	pShc-SHP2	

Product

Table 39: Properties of each product.

Id	Name	SBO
mwf9999977_6f0e_4e35_9b73_75587f3448e9	pShc-SHP2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_9 = {} & \text{mwc4824ff0\_2b51\_4d66\_ad48\_1145f670a6e1} \\ & \cdot [\text{mwa0349407\_8187\_48fc\_9e94\_5698ccc4e06d}] \\ & \cdot [\text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17}] \\ & - \text{mw0f1d282f\_1c6b\_455c\_8254\_3760632c6ecc} \\ & \cdot [\text{mwf9999977\_6f0e\_4e35\_9b73\_75587f3448e9}] \end{aligned} \tag{19}$$

Table 40: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwc4824ff0-_2b51-_4d66_ad48-_1145f670a6e1	k11		3.114		☑
mw0f1d282f-_1c6b-_455c_8254-_3760632c6ecc	k11r		0.200		☑

6.10 Reaction mweda6a945_fb5d_4d99_9958_11b2b2840308

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

Name r12

Reaction equation

$$\text{mwf9999977\_6f0e\_4e35\_9b73\_75587f3448e9} \xrightarrow{\text{mwf9999977\_6f0e\_4e35\_9b73\_75587f3448e9}} \text{mw3c2e1b43\_29ca\_491} \quad (20)$$

Reactant

Table 41: Properties of each reactant.

Id	Name	SBO
mwf9999977_6f0e_4e35_9b73_75587f3448e9	pShc-SHP2	

Modifier

Table 42: Properties of each modifier.

Id	Name	SBO
mwf9999977_6f0e_4e35_9b73_75587f3448e9	pShc-SHP2	

Products

Table 43: Properties of each product.

Id	Name	SBO
mw3c2e1b43_29ca_491a_93e9_c723a993d6fb	Shc	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Kinetic Law

Derived unit contains undeclared units

$$v_{10} = \text{mw0aa92e25\_f9aa\_461e\_92b8\_23b1b5b3ab92} \cdot [\text{mwf9999977\_6f0e\_4e35\_9b73\_75587f3448e9}] \tag{21}$$

Table 44: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw0aa92e25-_f9aa-_461e_92b8-_23b1b5b3ab92	k12		0.266		☑

6.11 Reaction mwd4bf58ea_70c9_43ea_a831_1fcde130ba28

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

Name r13

Reaction equation

$$\text{mwa0349407\_8187\_48fc\_9e94\_5698ccc4e06d} \xrightarrow{\text{mwa0349407\_8187\_48fc\_9e94\_5698ccc4e06d}} \text{mw3c2e1b43\_29ca\_49} \tag{22}$$

Reactant

Table 45: Properties of each reactant.

Id	Name	SBO
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	

Modifier

Table 46: Properties of each modifier.

Id	Name	SBO
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	

Product

Table 47: Properties of each product.

Id	Name	SBO
mw3c2e1b43_29ca_491a_93e9_c723a993d6fb	Shc	

Kinetic Law

Derived unit contains undeclared units

$$v_{11} = \text{mw2a4ed8a2\_fce4\_44a4\_adb9\_edc24a06b4e1} \cdot [\text{mwa0349407\_8187\_48fc\_9e94\_5698ccc4e06d}] \tag{23}$$

Table 48: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw2a4ed8a2-_fce4-_44a4_adb9-_edc24a06b4e1	k13		0.005		☑

6.12 Reaction mw4817365e_a33b_451f_bee1_de748377ede2

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

Name r18

Reaction equation

$$\text{mwa98802cb\_c977\_4fe0\_9e67\_5000904c2c36} + \text{mwf430a579\_ecbf\_48ba\_80c2\_06e455808f2a} \rightleftharpoons \text{mwa98802cb\_c977\_4} \tag{24}$$

Reactants

Table 49: Properties of each reactant.

Id	Name	SBO
mwa98802cb_c977_4fe0_9e67_5000904c2c36	pEGF-EGFR2-pShc	
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	

Modifiers

Table 50: Properties of each modifier.

Id	Name	SBO
mwa98802cb_c977_4fe0_9e67_5000904c2c36	pEGF-EGFR2-pShc	
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	
mw504578d8_96c3_471f_8a7e_8c14e7535d3d	pEGF-EGFR2-pShc-Grb2	

Product

Table 51: Properties of each product.

Id	Name	SBO
mw504578d8_96c3_471f_8a7e_8c14e7535d3d	pEGF-EGFR2-pShc-Grb2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{12} = {} & \text{mwe879a9ac\_4b8d\_4c9a\_a157\_a3751761cf63} \\ & \cdot [\text{mwa98802cb\_c977\_4fe0\_9e67\_5000904c2c36}] \\ & \cdot [\text{mwf430a579\_ecbf\_48ba\_80c2\_06e455808f2a}] \\ & - \text{mwa18578d7\_236f\_4939\_baca\_52259e38fe15} \\ & \cdot [\text{mw504578d8\_96c3\_471f\_8a7e\_8c14e7535d3d}] \end{aligned} \tag{25}$$

Table 52: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe879a9ac-_4b8d-_4c9a_a157-_a3751761cf63	k18		3.0		☑

Id	Name	SBO	Value	Unit	Constant
mwa18578d7-_236f-_4939_baca-_52259e38fe15	kr18		0.1		☑

6.13 Reaction mw03998474_934b_4e4a_8c0c_ca359e402ac2

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

Name r19

Reaction equation

$$\text{mw504578d8\_96c3\_471f\_8a7e\_8c14e7535d3d} + \text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17} \overset{\text{mw504578d8\_96c3\_}}{\rightleftharpoons} \tag{26}$$

Reactants

Table 53: Properties of each reactant.

Id	Name	SBO
mw504578d8_96c3_471f_8a7e_8c14e7535d3d	pEGF-EGFR2-pShc-Grb2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Modifiers

Table 54: Properties of each modifier.

Id	Name	SBO
mw504578d8_96c3_471f_8a7e_8c14e7535d3d	pEGF-EGFR2-pShc-Grb2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	
mw45ab688a_6467_4a3e_a779_2118fa84d69e	pEGF-EGFR2-pShc-Grb2-SHP2	

Product

Table 55: Properties of each product.

Id	Name	SBO
mw45ab688a_6467_4a3e_a779_2118fa84d69e	pEGF-EGFR2-pShc-Grb2-SHP2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{13} = {} & \text{mw289fed85\_e6ee\_43e6\_a69f\_77b5f487a452} \\ & \cdot [\text{mw504578d8\_96c3\_471f\_8a7e\_8c14e7535d3d}] \\ & \cdot [\text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17}] \\ & - \text{mw8768b5c7\_b227\_4825\_aa55\_a525b0d915c2} \\ & \cdot [\text{mw45ab688a\_6467\_4a3e\_a779\_2118fa84d69e}] \end{aligned} \tag{27}$$

Table 56: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw289fed85-_e6ee-_43e6_a69f-_77b5f487a452	k19		10.0		☑
mw8768b5c7-_b227-_4825_aa55-_a525b0d915c2	kr19		1.0		☑

6.14 Reaction mw7bb43f0a_c87e_41ff_8a43_cdf45c8f05e6

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

Name r20

Reaction equation

$$\text{mw45ab688a\_6467\_4a3e\_a779\_2118fa84d69e} \xrightarrow{\text{mw45ab688a\_6467\_4a3e\_a779\_2118fa84d69e}} \text{mwa8f2e7b2\_0927\_4ab} \tag{28}$$

Reactant

Table 57: Properties of each reactant.

Id	Name	SBO
mw45ab688a_6467_4a3e_a779_2118fa84d69e	pEGF-EGFR2-pShc-Grb2-SHP2	

Modifier

Table 58: Properties of each modifier.

Id	Name	SBO
mw45ab688a_6467_4a3e_a779_2118fa84d69e	pEGF-EGFR2-pShc-Grb2-SHP2	

Products

Table 59: Properties of each product.

Id	Name	SBO
mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3	EGF-EGFR2	
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Kinetic Law

Derived unit contains undeclared units

$$v_{14} = \text{mwd12a67b3\_6d98\_40e9\_a54b\_282a577498eb} \cdot [\text{mw45ab688a\_6467\_4a3e\_a779\_2118fa84d69e}] \quad (29)$$

Table 60: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwd12a67b3-_6d98-_40e9_a54b-_282a577498eb	k20		2.661		☑

6.15 Reaction mwd9262331_e35a_4614_943a_89bcf8a492e3

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

Name r23

Reaction equation

$$\text{mw504578d8\_96c3\_471f\_8a7e\_8c14e7535d3d} + \text{mw9dcaa655\_a755\_426e\_a3fa\_1ad7c3c45575} \rightleftharpoons \text{mw504578d8\_96c3\_} \quad (30)$$

Reactants

Table 61: Properties of each reactant.

Id	Name	SBO
mw504578d8_96c3_471f_8a7e_8c14e7535d3d	pEGF-EGFR2-pShc-Grb2	
mw9dcaa655_a755_426e_a3fa_1ad7c3c45575	SOS	

Modifiers

Table 62: Properties of each modifier.

Id	Name	SBO
mw504578d8_96c3_471f_8a7e_8c14e7535d3d	pEGF-EGFR2-pShc-Grb2	
mw9dcaa655_a755_426e_a3fa_1ad7c3c45575	SOS	
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	

Product

Table 63: Properties of each product.

Id	Name	SBO
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{15} = {} & \text{mw6ac313e2\_e8a9\_42a9\_b13a\_27e55c1012a2} \\ & \cdot [\text{mw504578d8\_96c3\_471f\_8a7e\_8c14e7535d3d}] \\ & \cdot [\text{mw9dcaa655\_a755\_426e\_a3fa\_1ad7c3c45575}] \\ & - \text{mw93f832d7\_eefb\_43dd\_853c\_a0d7a76023cf} \\ & \cdot [\text{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21}] \end{aligned} \tag{31}$$

Table 64: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw6ac313e2-_e8a9-_42a9_b13a-_27e55c1012a2	k23		10.000		☑
mw93f832d7-_eefb-_43dd_853c-_a0d7a76023cf	kr23		0.021		☑

6.16 Reaction mwc5f121dc_d27d_4c3d_90f2_67d0adaf144a

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

Name r26

Reaction equation

$$\text{mwf430a579\_ecbf\_48ba\_80c2\_06e455808f2a} + \text{mw9dcaa655\_a755\_426e\_a3fa\_1ad7c3c45575} \overset{\text{mwf430a579\_ecbf\_48}}{\rightleftharpoons} \tag{32}$$

Reactants

Table 65: Properties of each reactant.

Id	Name	SBO
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	
mw9dcaa655_a755_426e_a3fa_1ad7c3c45575	SOS	

Modifiers

Table 66: Properties of each modifier.

Id	Name	SBO
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	
mw9dcaa655_a755_426e_a3fa_1ad7c3c45575	SOS	
mw1093b3af_1864_4ba3_a541_6009a9921282	Grb2-SOS	

Product

Table 67: Properties of each product.

Id	Name	SBO
mw1093b3af_1864_4ba3_a541_6009a9921282	Grb2-SOS	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{16} = {} & \text{mwbb727dc5\_30e8\_45f4\_9d15\_3b34be5c1e93} \\ & \cdot [\text{mwf430a579\_ecbf\_48ba\_80c2\_06e455808f2a}] \\ & \cdot [\text{mw9dcaa655\_a755\_426e\_a3fa\_1ad7c3c45575}] \\ & - \text{mw7ae1ee96\_563e\_4684\_bc9a\_8f4ef373620e} \\ & \cdot [\text{mw1093b3af\_1864\_4ba3\_a541\_6009a9921282}] \end{aligned} \tag{33}$$

Table 68: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwbb727dc5-_30e8-_45f4_9d15-_3b34be5c1e93	k26		0.100		☑
mw7ae1ee96-_563e-_4684_bc9a-_8f4ef373620e	kr26		0.002		☑

6.17 Reaction mw23a29b42_9813_4e46_b8ae_966e3215e6dc

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

Name r27

Reaction equation

$$\text{mwa98802cb\_c977\_4fe0\_9e67\_5000904c2c36} + \text{mw1093b3af\_1864\_4ba3\_a541\_6009a9921282} \xrightleftharpoons{\text{mwa98802cb\_c977\_}} \tag{34}$$

Reactants

Table 69: Properties of each reactant.

Id	Name	SBO
mwa98802cb_c977_4fe0_9e67_5000904c2c36	pEGF-EGFR2-pShc	
mw1093b3af_1864_4ba3_a541_6009a9921282	Grb2-SOS	

Modifiers

Table 70: Properties of each modifier.

Id	Name	SBO
mwa98802cb_c977_4fe0_9e67_5000904c2c36	pEGF-EGFR2-pShc	
mw1093b3af_1864_4ba3_a541_6009a9921282	Grb2-SOS	
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	

Product

Table 71: Properties of each product.

Id	Name	SBO
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{17} = {} & \text{mwbc5340b6\_06b7\_4081\_bd0c\_e7a397f06a92} \\ & \cdot [\text{mwa98802cb\_c977\_4fe0\_9e67\_5000904c2c36}] \\ & \cdot [\text{mw1093b3af\_1864\_4ba3\_a541\_6009a9921282}] \\ & - \text{mw0df80c0e\_c32b\_4f90\_99bd\_e8f90e4c8109} \\ & \cdot [\text{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21}] \end{aligned} \tag{35}$$

Table 72: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwbc5340b6-_06b7-_4081_bd0c-_e7a397f06a92	k27		10.000		☑

Id	Name	SBO	Value	Unit	Constant
mw0df80c0e-_c32b-_4f90_99bd-_e8f90e4c8109	kr27		0.045		☑

6.18 Reaction mw0e459167_515b_4c4d_8b67_bf0a5b3e9d61

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

Name r28

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mwf430a579\_ecbf\_48ba\_80c2\_06e455808f2a} \rightleftharpoons \text{mwbfcf6773\_1915\_43} \quad (36)$$

Reactants

Table 73: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	

Modifiers

Table 74: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	
mwd9462e5b_a272_4b66_ab66_fde9266b1a43	pEGF-EGFR2-Grb2	

Product

Table 75: Properties of each product.

Id	Name	SBO
mwd9462e5b_a272_4b66_ab66_fde9266b1a43	pEGF-EGFR2-Grb2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{18} = {} & \text{mwc585e0e4\_b7e7\_4290\_8a6d\_10fcd9759a2d} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mwf430a579\_ecbf\_48ba\_80c2\_06e455808f2a}] \\ & - \text{mwf44d37d0\_fe7f\_4e47\_bf10\_1e734fbc3391} \\ & \cdot [\text{mwd9462e5b\_a272\_4b66\_ab66\_fde9266b1a43}] \end{aligned} \tag{37}$$

Table 76: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwc585e0e4-_b7e7-_4290_8a6d-_10fcd9759a2d	k28		3.00		☑
mwf44d37d0-_fe7f-_4e47_bf10-_1e734fbc3391	kr28		0.05		☑

6.19 Reaction mwc52e0f9b_1e0c_46ca_8d18_f05ef4a080cb

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

Name r29

Reaction equation

$$\text{mwd9462e5b\_a272\_4b66\_ab66\_fde9266b1a43} + \text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17} \rightleftharpoons \text{mwd9462e5b\_a272\_} \tag{38}$$

Reactants

Table 77: Properties of each reactant.

Id	Name	SBO
mwd9462e5b_a272_4b66_ab66_fde9266b1a43	pEGF-EGFR2-Grb2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Modifiers

Table 78: Properties of each modifier.

Id	Name	SBO
mwd9462e5b_a272_4b66_ab66_fde9266b1a43	pEGF-EGFR2-Grb2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	
mw925b938a_fe73_4664_ba6f_e72e57780891	pEGF-EGFR2-Grb2-SHP2	

Product

Table 79: Properties of each product.

Id	Name	SBO
mw925b938a_fe73_4664_ba6f_e72e57780891	pEGF-EGFR2-Grb2-SHP2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{19} = {} & \text{mw3d564c3c\_aa54\_4c16\_90be\_662cfcbf8bc8} \\ & \cdot [\text{mwd9462e5b\_a272\_4b66\_ab66\_fde9266b1a43}] \\ & \cdot [\text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17}] \\ & - \text{mw371642bb\_3836\_4ded\_93a5\_68fa9b464896} \\ & \cdot [\text{mw925b938a\_fe73\_4664\_ba6f\_e72e57780891}] \end{aligned} \tag{39}$$

Table 80: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw3d564c3c-_aa54-_4c16_90be-_662cfcbf8bc8	k29		10.0		☑
mw371642bb-_3836-_4ded_93a5-_68fa9b464896	kr29		1.0		☑

6.20 Reaction mw4f89bf6c_8691_41a6_a1ac_13e6aa8c4b93

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

Name r30

Reaction equation

$$\text{mw925b938a\_fe73\_4664\_ba6f\_e72e57780891} \xrightarrow{\text{mw925b938a\_fe73\_4664\_ba6f\_e72e57780891}} \text{mwa8f2e7b2\_0927\_4ab} \tag{40}$$

Reactant

Table 81: Properties of each reactant.

Id	Name	SBO
mw925b938a_fe73_4664_ba6f_e72e57780891	pEGF-EGFR2-Grb2-SHP2	

Modifier

Table 82: Properties of each modifier.

Id	Name	SBO
mw925b938a_fe73_4664_ba6f_e72e57780891	pEGF-EGFR2-Grb2-SHP2	

Products

Table 83: Properties of each product.

Id	Name	SBO
mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3	EGF-EGFR2	
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Kinetic Law

Derived unit contains undeclared units

$$v_{20} = \text{mw736e4a7b\_4a25\_4d32\_b96b\_b088e3bd41e7} \cdot [\text{mw925b938a\_fe73\_4664\_ba6f\_e72e57780891}] \tag{41}$$

Table 84: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw736e4a7b-_4a25-_4d32_b96b-_b088e3bd41e7	k30		2.661		☑

6.21 Reaction mw35f71989_f89b_4440_b1a4_ebc7b4cc18b2

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

Name r31

Reaction equation

$$\text{mwd9462e5b\_a272\_4b66\_ab66\_fde9266b1a43} + \text{mw9dcaa655\_a755\_426e\_a3fa\_1ad7c3c45575} \overset{\text{mwd9462e5b\_a272\_4}}{\rightleftharpoons} \tag{42}$$

Reactants

Table 85: Properties of each reactant.

Id	Name	SBO
mwd9462e5b_a272_4b66_ab66_fde9266b1a43	pEGF-EGFR2-Grb2	
mw9dcaa655_a755_426e_a3fa_1ad7c3c45575	SOS	

Modifiers

Table 86: Properties of each modifier.

Id	Name	SBO
mwd9462e5b_a272_4b66_ab66_fde9266b1a43	pEGF-EGFR2-Grb2	
mw9dcaa655_a755_426e_a3fa_1ad7c3c45575	SOS	
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	

Product

Table 87: Properties of each product.

Id	Name	SBO
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{21} = {} & \text{mw084cd67b\_f328\_48a7\_8e16\_1d6256c8c137} \\ & \cdot [\text{mwd9462e5b\_a272\_4b66\_ab66\_fde9266b1a43}] \\ & \cdot [\text{mw9dcaa655\_a755\_426e\_a3fa\_1ad7c3c45575}] \\ & - \text{mw43f177dc\_f522\_4dd1\_b8e5\_21b2b8fdfdba} \\ & \cdot [\text{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6}] \end{aligned} \tag{43}$$

Table 88: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw084cd67b-_f328-_48a7_8e16-_1d6256c8c137	k31		10.00		☑
mw43f177dc-_f522-_4dd1_b8e5-_21b2b8fdfdba	kr31		0.06		☑

6.22 Reaction mwd0d92dd4_81b7_4385_bfd7_5de82e193ecd

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

Name r32

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mw1093b3af\_1864\_4ba3\_a541\_6009a9921282} \rightleftharpoons \text{mwbfcf6773\_1915\_4} \tag{44}$$

Reactants

Table 89: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw1093b3af_1864_4ba3_a541_6009a9921282	Grb2-SOS	

Modifiers

Table 90: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw1093b3af_1864_4ba3_a541_6009a9921282	Grb2-SOS	
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	

Product

Table 91: Properties of each product.

Id	Name	SBO
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{22} = {} & \text{mwfa6a58ab\_0ca5\_4c05\_92b0\_870593ac135d} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mw1093b3af\_1864\_4ba3\_a541\_6009a9921282}] \\ & - \text{mwb9547c37\_09b7\_4258\_95ab\_8039d4088298} \\ & \cdot [\text{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6}] \end{aligned} \tag{45}$$

Table 92: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwfa6a58ab-_0ca5-_4c05_92b0-_870593ac135d	k32		2.734		☑

Id	Name	SBO	Value	Unit	Constant
mwb9547c37-_09b7-_4258_95ab-_8039d4088298	kr32		0.025		☑

6.23 Reaction mwbb77e3d6_6065_4344_9361_e30c03514f4e

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

Name r35

Reaction equation

$$\text{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21} + \text{mw8f5a7b5c\_ca4c\_4a4c\_85b1\_e5d640c426bf} \overset{\text{mwfbda4e09\_0cbb\_49}}{\rightleftharpoons} \quad (46)$$

Reactants

Table 93: Properties of each reactant.

Id	Name	SBO
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	
mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	Ras-GDP	

Modifiers

Table 94: Properties of each modifier.

Id	Name	SBO
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	
mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	Ras-GDP	
mwf40d6176_abfc_4a30_886f_83a19fcffc48	pEGF-EGFR2-pShc-Grb2-SOS-Ras-GDP	

Product

Table 95: Properties of each product.

Id	Name	SBO
mwf40d6176_abfc_4a30_886f_83a19fcffc48	pEGF-EGFR2-pShc-Grb2-SOS-Ras-GDP	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{23} = {} & \text{mw7e09242b\_bd80\_4af0\_90c8\_e0cddace89fe} \\ & \cdot [\text{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21}] \\ & \cdot [\text{mw8f5a7b5c\_ca4c\_4a4c\_85b1\_e5d640c426bf}] \\ & - \text{mw2dfc8a19\_1792\_4e12\_af38\_8bfbda31a577} \\ & \cdot [\text{mwf40d6176\_abfc\_4a30\_886f\_83a19fcffc48}] \end{aligned} \tag{47}$$

Table 96: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw7e09242b_bd80_4af0_90c8_e0cddace89fe	k35		202.90		☑
mw2dfc8a19_1792_4e12_af38_8bfbda31a577	kr35		0.18		☑

6.24 Reaction mw921ee820_1dbb_4b5f_866c_87da620d8f89

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

Name r39

Reaction equation

$$\text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44} \xrightarrow{\text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44}} \text{mw8f5a7b5c\_ca4c\_4a4} \tag{48}$$

Reactant

Table 97: Properties of each reactant.

Id	Name	SBO
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	

Modifier

Table 98: Properties of each modifier.

Id	Name	SBO
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	

Product

Table 99: Properties of each product.

Id	Name	SBO
mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	Ras-GDP	

Kinetic Law

Derived unit contains undeclared units

$$v_{24} = \text{mw553c0b3c\_af7f\_4309\_8c61\_0f1e2c32347c} \cdot [\text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44}] \tag{49}$$

Table 100: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw553c0b3c-_af7f-_4309_8c61-_0f1e2c32347c	k39		$1.67 \cdot 10^{-4}$		☑

6.25 Reaction mw0bcfad86_59b9_42ff_bcb7_fbb44845049d

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

Name r36

Reaction equation

$$\text{mwf40d6176\_abfc\_4a30\_886f\_83a19fcffc48} \xrightarrow{\text{mwf40d6176\_abfc\_4a30\_886f\_83a19fcffc48}} \text{mwfbda4e09\_0cbb\_49bc\_a} \tag{50}$$

Reactant

Table 101: Properties of each reactant.

Id	Name	SBO
mwf40d6176_abfc_4a30_886f_83a19fcffc48	pEGF-EGFR2-pShc-Grb2-SOS-Ras-GDP	

Modifier

Table 102: Properties of each modifier.

Id	Name	SBO
mwf40d6176_abfc_4a30_886f_83a19fcffc48	pEGF-EGFR2-pShc-Grb2-SOS-Ras-GDP	

Products

Table 103: Properties of each product.

Id	Name	SBO
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	

Kinetic Law

Derived unit contains undeclared units

$$v_{25} = \text{mwfc146e94\_8070\_4727\_8416\_fb55829068cb} \cdot [\text{mwf40d6176\_abfc\_4a30\_886f\_83a19fcffc48}]$$

Table 104: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwfc146e94-_8070-_4727_8416-_fb55829068cb	k36		0.143		☑

6.26 Reaction mwe9b50ac7_dac3_4eba_b1db_b3fd392d8fb7

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

Name r38

Reaction equation

$$\text{mw28464aad\_8013\_4a23\_ae09\_a406954859a6} \xrightarrow{\text{mw28464aad\_8013\_4a23\_ae09\_a406954859a6}} \text{mwf8cc7834\_bf4f\_4cc} \tag{52}$$

Reactant

Table 105: Properties of each reactant.

Id	Name	SBO
mw28464aad_8013_4a23_ae09_a406954859a6	pEGF-EGFR2-Grb2-SOS-Ras-GDP	

Modifier

Table 106: Properties of each modifier.

Id	Name	SBO
mw28464aad_8013_4a23_ae09_a406954859a6	pEGF-EGFR2-Grb2-SOS-Ras-GDP	

Products

Table 107: Properties of each product.

Id	Name	SBO
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	

Kinetic Law

Derived unit contains undeclared units

$$v_{26} = \text{mw26688d02\_8ab9\_4123\_89c4\_022b981cb72c} \cdot [\text{mw28464aad\_8013\_4a23\_ae09\_a406954859a6}] \tag{53}$$

Table 108: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw26688d02-_8ab9-_4123_89c4-_022b981cb72c	k38		0.143		☑

6.27 Reaction mw934c3638_603e_4ff0_a763_68f9405fa01f

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

Name r37

Reaction equation

$$\underset{(54)}{\text{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6} + \text{mw8f5a7b5c\_ca4c\_4a4c\_85b1\_e5d640c426bf}} \rightleftharpoons \text{mwf8cc7834\_bf4f\_4cc}$$

Reactants

Table 109: Properties of each reactant.

Id	Name	SBO
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	
mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	Ras-GDP	

Modifiers

Table 110: Properties of each modifier.

Id	Name	SBO
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	
mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	Ras-GDP	
mw28464aad_8013_4a23_ae09_a406954859a6	pEGF-EGFR2-Grb2-SOS-Ras-GDP	

Product

Table 111: Properties of each product.

Id	Name	SBO
mw28464aad_8013_4a23_ae09_a406954859a6	pEGF-EGFR2-Grb2-SOS-Ras-GDP	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{27} = {} & \text{mw5639395a\_a5cd\_46dd\_81b8\_30fe72400a2e} \\ & \cdot [\text{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6}] \\ & \cdot [\text{mw8f5a7b5c\_ca4c\_4a4c\_85b1\_e5d640c426bf}] \\ & - \text{mw9cc637fe\_d9ca\_47d2\_a4dc\_66009d458094} \\ & \cdot [\text{mw28464aad\_8013\_4a23\_ae09\_a406954859a6}] \end{aligned} \tag{55}$$

Table 112: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw5639395a-_a5cd-_46dd_81b8-_30fe72400a2e	k37		202.90		☑
mw9cc637fe-_d9ca-_47d2_a4dc-_66009d458094	kr37		0.18		☑

6.28 Reaction mw3c617363_649b_4460_a694_36f7a3127a62

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

Name r40

Reaction equation

$$\text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44} + \text{mw7cff9a0e\_094d\_498e\_bf7f\_7b162c61d63a} \rightleftharpoons \text{mwa54a9c38\_c98b\_4} \tag{56}$$

Reactants

Table 113: Properties of each reactant.

Id	Name	SBO
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	
mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	Ras-GAP	

Modifiers

Table 114: Properties of each modifier.

Id	Name	SBO
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	
mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	Ras-GAP	
mwdf82303e_323f_4c51_a858_56a59233cd98	Ras-GTP-Ras-GAP	

Product

Table 115: Properties of each product.

Id	Name	SBO
mwdf82303e_323f_4c51_a858_56a59233cd98	Ras-GTP-Ras-GAP	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{28} = {} & \text{mw19173345\_925d\_427b\_8658\_add0978e5931} \\ & \cdot [\text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44}] \\ & \cdot [\text{mw7cff9a0e\_094d\_498e\_bf7f\_7b162c61d63a}] \\ & - \text{mw9f6790d7\_19ce\_41d9\_b4de\_a1658c047501} \\ & \cdot [\text{mwdf82303e\_323f\_4c51\_a858\_56a59233cd98}] \end{aligned} \tag{57}$$

Table 116: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw19173345-_925d-_427b_8658-_add0978e5931	k40		2.854		☑

Id	Name	SBO	Value	Unit	Constant
mw9f6790d7-_19ce-_41d9_b4de-_a1658c047501	kr40		0.960		☑

6.29 Reaction mwf31259aa_32b7_4104_be70_045297b9a512

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

Name r41

Reaction equation

mwdf82303e_323f_4c51_a858_56a59233cd98 $\xrightarrow{\text{mwdf82303e\_323f\_4c51\_a858\_56a59233cd98}}$ mw8f5a7b5c_ca4c_4a4

(58)

Reactant

Table 117: Properties of each reactant.

Id	Name	SBO
mwdf82303e_323f_4c51_a858_56a59233cd98	Ras-GTP-Ras-GAP	

Modifier

Table 118: Properties of each modifier.

Id	Name	SBO
mwdf82303e_323f_4c51_a858_56a59233cd98	Ras-GTP-Ras-GAP	

Products

Table 119: Properties of each product.

Id	Name	SBO
mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	Ras-GDP	
mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	Ras-GAP	

Kinetic Law

Derived unit contains undeclared units

$$v_{29} = \text{mw23e16d40\_acbb\_4658\_a336\_be5d0b0dd86a} \cdot [\text{mwdf82303e\_323f\_4c51\_a858\_56a59233cd98}] \tag{59}$$

Table 120: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw23e16d40-_acbb-_4658_a336-_be5d0b0dd86a	k41		7.76		☑

6.30 Reaction mw0a51fbf0_409b_4b45_b4ac_0220af4c4e3c

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

Name r42

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mw7cff9a0e\_094d\_498e\_bf7f\_7b162c61d63a} \xrightleftharpoons{\text{mwbfcf6773\_1915\_43}} \tag{60}$$

Reactants

Table 121: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	Ras-GAP	

Modifiers

Table 122: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	Ras-GAP	

Id	Name	SBO
mwd39388fd_4f85_4d1c_b2a3_37857c595a2d	pEGF-EGFR2-Ras-GAP	

Product

Table 123: Properties of each product.

Id	Name	SBO
mwd39388fd_4f85_4d1c_b2a3_37857c595a2d	pEGF-EGFR2-Ras-GAP	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{30} = {} & \text{mw10c97b8e\_72aa\_4f56\_b3b9\_c94baad7e213} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mw7cff9a0e\_094d\_498e\_bf7f\_7b162c61d63a}] \\ & - \text{mw0b6eb5f7\_b133\_4b3d\_bf15\_9fd6c2e9332d} \\ & \cdot [\text{mwd39388fd\_4f85\_4d1c\_b2a3\_37857c595a2d}] \end{aligned} \tag{61}$$

Table 124: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw10c97b8e-_72aa-_4f56_b3b9-_c94baad7e213	k42		0.10		☑
mw0b6eb5f7-_b133-_4b3d_bf15-_9fd6c2e9332d	kr42		0.01		☑

6.31 Reaction mw33baddbd_a23f_45bb_b126_0ba60bbf6c53

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

Name r43

Reaction equation

$$\text{mwd39388fd\_4f85\_4d1c\_b2a3\_37857c595a2d} + \text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44} \rightleftharpoons \text{mwd39388fd\_4f85\_4} \tag{62}$$

Reactants

Table 125: Properties of each reactant.

Id	Name	SBO
mwd39388fd_4f85_4d1c_b2a3_37857c595a2d	pEGF-EGFR2-Ras-GAP	
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	

Modifiers

Table 126: Properties of each modifier.

Id	Name	SBO
mwd39388fd_4f85_4d1c_b2a3_37857c595a2d	pEGF-EGFR2-Ras-GAP	
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	
mwd7bf31ba_b05c_4c45_bb2f_6a2468a2a507	pEGF-EGFR2-Ras-GAP-Ras-GTP	

Product

Table 127: Properties of each product.

Id	Name	SBO
mwd7bf31ba_b05c_4c45_bb2f_6a2468a2a507	pEGF-EGFR2-Ras-GAP-Ras-GTP	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{31} = {} & \text{mwe483687f\_b591\_4c42\_9abc\_7ea9f47470bf} \\ & \cdot [\text{mwd39388fd\_4f85\_4d1c\_b2a3\_37857c595a2d}] \\ & \cdot [\text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44}] \\ & - \text{mwcf964aba\_9db6\_46c5\_b687\_beafc5d89169} \\ & \cdot [\text{mwd7bf31ba\_b05c\_4c45\_bb2f\_6a2468a2a507}] \end{aligned} \tag{63}$$

Table 128: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe483687f-_b591-_4c42_9abc-_7ea9f47470bf	k43		2.845		☑
mwcf964aba-_9db6-_46c5_b687-_beafc5d89169	kr43		0.960		☑

6.32 Reaction mw652570eb_c9d3_499b_b877_61d360b10980

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

Name r44

Reaction equation

mwd7bf31ba_b05c_4c45_bb2f_6a2468a2a507 $\xrightarrow{\text{mwd7bf31ba\_b05c\_4c45\_bb2f\_6a2468a2a507}}$ mwd39388fd_4f85_4d1
(64)

Reactant

Table 129: Properties of each reactant.

Id	Name	SBO
mwd7bf31ba_b05c_4c45_bb2f_6a2468a2a507	pEGF-EGFR2-Ras-GAP-Ras-GTP	

Modifier

Table 130: Properties of each modifier.

Id	Name	SBO
mwd7bf31ba_b05c_4c45_bb2f_6a2468a2a507	pEGF-EGFR2-Ras-GAP-Ras-GTP	

Products

Table 131: Properties of each product.

Id	Name	SBO
mwd39388fd_4f85_4d1c_b2a3_37857c595a2d	pEGF-EGFR2-Ras-GAP	
mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf	Ras-GDP	

Kinetic Law

Derived unit contains undeclared units

$$v_{32} = \text{mwb881f20a\_cf8a\_493a\_aa84\_59ee90f26dd9} \cdot [\text{mwd7bf31ba\_b05c\_4c45\_bb2f\_6a2468a55507}] \quad (65)$$

Table 132: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwb881f20a-_cf8a-_493a_aa84-_59ee90f26dd9	k44		7.76		☑

6.33 Reaction mwc5aae1f8_52e4_4bcd_b044_3768f90b7b19

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

Name r45

Reaction equation

$$\text{mwd39388fd\_4f85\_4d1c\_b2a3\_37857c595a2d} + \text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17} \rightleftharpoons \text{mwd39388fd\_4f85\_4} \quad (66)$$

Reactants

Table 133: Properties of each reactant.

Id	Name	SBO
mwd39388fd_4f85_4d1c_b2a3_37857c595a2d	pEGF-EGFR2-Ras-GAP	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Modifiers

Table 134: Properties of each modifier.

Id	Name	SBO
mwd39388fd_4f85_4d1c_b2a3_37857c595a2d	pEGF-EGFR2-Ras-GAP	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	
mwbf5cb039_b830_4282_aa22_a3dda6272ec1	pEGF-EGFR2-Ras-GAP-SHP2	

Product

Table 135: Properties of each product.

Id	Name	SBO
mwbf5cb039_b830_4282_aa22_a3dda6272ec1	pEGF-EGFR2-Ras-GAP-SHP2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{33} = {} & \text{mwb4c6ed27\_c7ec\_438f\_bafd\_4a09a9f356f1} \\ & \cdot [\text{mwd39388fd\_4f85\_4d1c\_b2a3\_37857c595a2d}] \\ & \cdot [\text{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17}] \\ & - \text{mwba77a9ba\_078d\_4ec6\_a8b8\_d7042a2cefe7} \\ & \cdot [\text{mwbf5cb039\_b830\_4282\_aa22\_a3dda6272ec1}] \end{aligned} \tag{67}$$

Table 136: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwb4c6ed27-_c7ec-_438f_bafd-_4a09a9f356f1	k45		3.114		☑
mwba77a9ba-_078d-_4ec6_a8b8-_d7042a2cefe7	kr45		0.200		☑

6.34 Reaction mw642ac312_2ee7_4e66_8f3e_e2da2bb6412a

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

Name r46

Reaction equation

$$\text{mwbf5cb039\_b830\_4282\_aa22\_a3dda6272ec1} \xrightarrow{\text{mwbf5cb039\_b830\_4282\_aa22\_a3dda6272ec1}} \text{mwa8f2e7b2\_0927\_4ab} \tag{68}$$

Reactant

Table 137: Properties of each reactant.

Id	Name	SBO
mwbf5cb039_b830_4282_aa22_a3dda6272ec1	pEGF-EGFR2-Ras-GAP-SHP2	

Modifier

Table 138: Properties of each modifier.

Id	Name	SBO
mwbf5cb039_b830_4282_aa22_a3dda6272ec1	pEGF-EGFR2-Ras-GAP-SHP2	

Products

Table 139: Properties of each product.

Id	Name	SBO
mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3	EGF-EGFR2	
mw7cff9a0e_094d_498e_bf7f_7b162c61d63a	Ras-GAP	
mwe57c3282_5935_405c_8c0b_7fadb7a5de17	SHP	

Kinetic Law

Derived unit contains undeclared units

$$v_{34} = \text{mwe1743f7b\_ca2c\_47d4\_91d7\_aed2748d98c5} \cdot [\text{mwbf5cb039\_b830\_4282\_aa22\_a3dda6272ec1}] \tag{69}$$

Table 140: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe1743f7b-_ca2c-_47d4_91d7-_aed2748d98c5	k46		2.661		☑

6.35 Reaction mw584a64d0_560a_4297_9882_80cb4eff73f3

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

Name r47

Reaction equation

$$\text{mw66ac98c4\_7e7b\_4071\_954d\_43eb17584220} + \text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44} \underset{(70)}{\overset{\text{mw66ac98c4\_7e7b\_}}{\rightleftharpoons}}$$

Reactants

Table 141: Properties of each reactant.

Id	Name	SBO
mw66ac98c4_7e7b_4071_954d_43eb17584220	Raf1	
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	

Modifiers

Table 142: Properties of each modifier.

Id	Name	SBO
mw66ac98c4_7e7b_4071_954d_43eb17584220	Raf1	
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	
mw83de7813_4941_45a6_a320_a551165bf22a	Raf1-Ras-GTP	

Product

Table 143: Properties of each product.

Id	Name	SBO
mw83de7813_4941_45a6_a320_a551165bf22a	Raf1-Ras-GTP	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{35} = {} & \text{mw9f1dbbe6\_8aa3\_4180\_bcea\_04343649d7ba} \\ & \cdot [\text{mw66ac98c4\_7e7b\_4071\_954d\_43eb17584220}] \\ & \cdot [\text{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44}] \\ & - \text{mwdf20ff60\_f0b7\_4c2a\_b393\_586ec1337e67} \\ & \cdot [\text{mw83de7813\_4941\_45a6\_a320\_a551165bf22a}] \end{aligned} \tag{71}$$

Table 144: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw9f1dbbe6-_8aa3-_4180_bcea-_04343649d7ba	k47		1.75		☑
mwdf20ff60-_f0b7-_4c2a_b393-_586ec1337e67	kr47		0.05		☑

6.36 Reaction mw42c97708_4f85_45a8_9141_d0ae529409ca

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

Name r48

Reaction equation

$$\text{mw83de7813\_4941\_45a6\_a320\_a551165bf22a} \xrightarrow{\text{mw83de7813\_4941\_45a6\_a320\_a551165bf22a}} \text{mwaff92910\_ed3d\_40} \tag{72}$$

Reactant

Table 145: Properties of each reactant.

Id	Name	SBO
mw83de7813_4941_45a6_a320_a551165bf22a	Raf1-Ras-GTP	

Modifier

Table 146: Properties of each modifier.

Id	Name	SBO
mw83de7813_4941_45a6_a320_a551165bf22a	Raf1-Ras-GTP	

Products

Table 147: Properties of each product.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mwa54a9c38_c98b_45e5_8432_4119fb777e44	Ras-GTP	

Kinetic Law

Derived unit contains undeclared units

$$v_{36} = \text{mw91f2ca92\_9556\_4fb8\_ae12\_0b72f3e3f261} \cdot [\text{mw83de7813\_4941\_45a6\_a320\_a551165bf22a}] \tag{73}$$

Table 148: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw91f2ca92-_9556-_4fb8_ae12-_0b72f3e3f261	k48		0.762		☑

6.37 Reaction mwaa65a34e_fabf_4d6d_ae0b_f1d08b068f33

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

Name r49

Reaction equation

$$\text{mwaff92910\_ed3d\_40b9\_a29c\_e4866167e828} + \text{mw0834731b\_0477\_4217\_a53b\_30cef851191b} \rightleftharpoons \text{mwaff92910\_ed3d\_4} \tag{74}$$

Reactants

Table 149: Properties of each reactant.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mw0834731b_0477_4217_a53b_30cef851191b	MEK	

Modifiers

Table 150: Properties of each modifier.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mw0834731b_0477_4217_a53b_30cef851191b	MEK	
mw4628f984_eb87_4922_9760_4975095ce6eb	Raf1active-MEK	

Product

Table 151: Properties of each product.

Id	Name	SBO
mw4628f984_eb87_4922_9760_4975095ce6eb	Raf1active-MEK	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{37} = {} & \text{mw77c60377\_28ae\_4aad\_b911\_5768fc8b824f} \\ & \cdot [\text{mwaff92910\_ed3d\_40b9\_a29c\_e4866167e828}] \\ & \cdot [\text{mw0834731b\_0477\_4217\_a53b\_30cef851191b}] \\ & - \text{mw2eed2db0\_ba78\_435b\_b2c8\_ee91efdba1b4} \\ & \cdot [\text{mw4628f984\_eb87\_4922\_9760\_4975095ce6eb}] \end{aligned} \tag{75}$$

Table 152: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw77c60377-_28ae-_4aad_b911-_5768fc8b824f	k49		4.000		☑
mw2eed2db0-_ba78-_435b_b2c8-_ee91efdba1b4	kr49		0.018		☑

6.38 Reaction mw1bd186cf_4762_480a_b70d_d7a775462398

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

Name r50

Reaction equation

$$\text{mw4628f984\_eb87\_4922\_9760\_4975095ce6eb} \xrightarrow{\text{mw4628f984\_eb87\_4922\_9760\_4975095ce6eb}} \text{mwaff92910\_ed3d\_40} \quad (76)$$

Reactant

Table 153: Properties of each reactant.

Id	Name	SBO
mw4628f984_eb87_4922_9760_4975095ce6eb	Raf1active-MEK	

Modifier

Table 154: Properties of each modifier.

Id	Name	SBO
mw4628f984_eb87_4922_9760_4975095ce6eb	Raf1active-MEK	

Products

Table 155: Properties of each product.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28	pMEK	

Kinetic Law

Derived unit contains undeclared units

$$v_{38} = \text{mw7e974605\_8d9c\_4250\_8f69\_072aab1f24f7} \cdot [\text{mw4628f984\_eb87\_4922\_9760\_4975095ce6eb}] \tag{77}$$

Table 156: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw7e974605-_8d9c-_4250_8f69-_072aab1f24f7	k50		3.5		☑

6.39 Reaction mwf5573ddf_ad7f_478a_a784_557a9cddaaf2

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

Name r51

Reaction equation

$$\text{mwaff92910\_ed3d\_40b9\_a29c\_e4866167e828} + \text{mw9b25f809\_18a1\_4c14\_8f4b\_cf18e6d93c28} \rightleftharpoons \text{mwaff92910\_ed3d\_40} \tag{78}$$

Reactants

Table 157: Properties of each reactant.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28	pMEK	

Modifiers

Table 158: Properties of each modifier.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28	pMEK	
mw12ba4000_d452_420c_be63_96d2848aca32	Raf1active-pMEK	

Product

Table 159: Properties of each product.

Id	Name	SBO
mw12ba4000_d452_420c_be63_96d2848aca32	Raf1active-pMEK	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{39} = {} & \text{mw11cdaca9\_941c\_4a59\_ba2a\_3bfeafb65aeb} \\ & \cdot [\text{mwaff92910\_ed3d\_40b9\_a29c\_e4866167e828}] \\ & \cdot [\text{mw9b25f809\_18a1\_4c14\_8f4b\_cf18e6d93c28}] \\ & - \text{mw58c37b3e\_91e7\_445e\_846e\_77cd0b2320af} \\ & \cdot [\text{mw12ba4000\_d452\_420c\_be63\_96d2848aca32}] \end{aligned} \tag{79}$$

Table 160: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw11cdaca9-_941c-_4a59_ba2a-_3bfeafb65aeb	k51		4.000		☑
mw58c37b3e-_91e7-_445e_846e-_77cd0b2320af	kr51		0.018		☑

6.40 Reaction mwb49058ff_2997_4187_abe7_4dce4ccf6ff4

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

Name r52

Reaction equation

$$\text{mw12ba4000\_d452\_420c\_be63\_96d2848aca32} \xrightarrow{\text{mw12ba4000\_d452\_420c\_be63\_96d2848aca32}} \text{mwaff92910\_ed3d\_40} \tag{80}$$

Reactant

Table 161: Properties of each reactant.

Id	Name	SBO
mw12ba4000_d452_420c_be63_96d2848aca32	Raf1active-pMEK	

Modifier

Table 162: Properties of each modifier.

Id	Name	SBO
mw12ba4000_d452_420c_be63_96d2848aca32	Raf1active-pMEK	

Products

Table 163: Properties of each product.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	

Kinetic Law

Derived unit contains undeclared units

$$v_{40} = \text{mw432640ec\_11b9\_484d\_ba26\_415538ab9a10} \cdot [\text{mw12ba4000\_d452\_420c\_be63\_96d2848aca32}] \tag{81}$$

Table 164: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw432640ec-_11b9-_484d_ba26-_415538ab9a10	k52		2.9		☑

6.41 Reaction mw8301b154_9463_4516_b4c5_c8f8b68691fe

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

Name r53

Reaction equation

$$\text{mwf816df4c\_4593\_4d23\_990f\_0d7c15ddde5d} + \text{mw7e23b961\_186b\_47a0\_a8b5\_5e9957766792} \rightleftharpoons \text{mwf816df4c\_4593\_4} \quad (82)$$

Reactants

Table 165: Properties of each reactant.

Id	Name	SBO
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	
mw7e23b961_186b_47a0_a8b5_5e9957766792	ERK	

Modifiers

Table 166: Properties of each modifier.

Id	Name	SBO
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	
mw7e23b961_186b_47a0_a8b5_5e9957766792	ERK	
mwcedf8ecd_67bd_4b91_aa04_d58782dec2a4	ppMEK-ERK	

Product

Table 167: Properties of each product.

Id	Name	SBO
mwcedf8ecd_67bd_4b91_aa04_d58782dec2a4	ppMEK-ERK	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{41} = {} & \text{mw11bb74b8\_d908\_46f0\_ac4d\_06e8dd1aa5ae} \\ & \cdot [\text{mwf816df4c\_4593\_4d23\_990f\_0d7c15ddde5d}] \\ & \cdot [\text{mw7e23b961\_186b\_47a0\_a8b5\_5e9957766792}] \\ & - \text{mwb44117f5\_20b2\_495e\_adf3\_3467cd119fd6} \\ & \cdot [\text{mwcedf8ecd\_67bd\_4b91\_aa04\_d58782dec2a4}] \end{aligned} \tag{83}$$

Table 168: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw11bb74b8-_d908-_46f0_ac4d-_06e8dd1aa5ae	k53		3.000		☑
mwb44117f5-_20b2-_495e_adf3-_3467cd119fd6	kr53		0.033		☑

6.42 Reaction mwf95f743d_6108_49fe_8ffd_bdcc1a9f9a8d

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

Name r54

Reaction equation

$$\text{mwcedf8ecd\_67bd\_4b91\_aa04\_d58782dec2a4} \xrightarrow{\text{mwcedf8ecd\_67bd\_4b91\_aa04\_d58782dec2a4}} \text{mwf816df4c\_4593\_4d2} \tag{84}$$

Reactant

Table 169: Properties of each reactant.

Id	Name	SBO
mwcedf8ecd_67bd_4b91_aa04_d58782dec2a4	ppMEK-ERK	

Modifier

Table 170: Properties of each modifier.

Id	Name	SBO
mwcedf8ecd_67bd_4b91_aa04_d58782dec2a4	ppMEK-ERK	

Products

Table 171: Properties of each product.

Id	Name	SBO
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	
mwcc894c94_0ddf_42cc_913e_cdcc4d471d94	pERK	

Kinetic Law

Derived unit contains undeclared units

$$v_{42} = \text{mwa4c71b8d\_fb74\_465b\_b76e\_cec4e4c95484} \cdot [\text{mwcedf8ecd\_67bd\_4b91\_aa04\_d58782dec2a4}] \tag{85}$$

Table 172: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwa4c71b8d-_fb74-_465b_b76e-_cec4e4c95484	k54		16.0		☑

6.43 Reaction mw51d9d6b8_f0c0_4763_9d11_9be61b5cf5c9

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

Name r55

Reaction equation

$$\text{mwf816df4c\_4593\_4d23\_990f\_0d7c15ddde5d} + \text{mwcc894c94\_0ddf\_42cc\_913e\_cdcc4d471d94} \rightleftharpoons \text{mwf816df4c\_4593\_4} \tag{86}$$

Reactants

Table 173: Properties of each reactant.

Id	Name	SBO
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	
mwcc894c94_0ddf_42cc_913e_cdcc4d471d94	pERK	

Modifiers

Table 174: Properties of each modifier.

Id	Name	SBO
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	
mwcc894c94_0ddf_42cc_913e_cdcc4d471d94	pERK	
mw6cb74b27_ffef_49bb_8ffb_622d552caa9e	ppMEK-pERK	

Product

Table 175: Properties of each product.

Id	Name	SBO
mw6cb74b27_ffef_49bb_8ffb_622d552caa9e	ppMEK-pERK	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{43} = {} & \text{mwc40b3165\_cc16\_4f78\_86b5\_e34f2731dcbb} \\ & \cdot [\text{mwf816df4c\_4593\_4d23\_990f\_0d7c15ddde5d}] \\ & \cdot [\text{mwcc894c94\_0ddf\_42cc\_913e\_cdcc4d471d94}] \\ & - \text{mw8bff2fe0\_b582\_4020\_8f05\_83f14451b1c0} \\ & \cdot [\text{mw6cb74b27\_ffef\_49bb\_8ffb\_622d552caa9e}] \end{aligned} \tag{87}$$

Table 176: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwc40b3165-_cc16-_4f78_86b5-_e34f2731dcbb	k55		3.000		☑
mw8bff2fe0-_b582-_4020_8f05-_83f14451b1c0	kr55		0.033		☑

6.44 Reaction mw6fd24d16_f57d_46c6_82f5_3f00759fa16b

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

Name r56

Reaction equation

mw6cb74b27_ffef_49bb_8ffb_622d552caa9e $\xrightarrow{\text{mw6cb74b27\_ffef\_49bb\_8ffb\_622d552caa9e}}$ mwf816df4c_4593_4d23_9 (88)

Reactant

Table 177: Properties of each reactant.

Id	Name	SBO
mw6cb74b27_ffef_49bb_8ffb_622d552caa9e	ppMEK-pERK	

Modifier

Table 178: Properties of each modifier.

Id	Name	SBO
mw6cb74b27_ffef_49bb_8ffb_622d552caa9e	ppMEK-pERK	

Products

Table 179: Properties of each product.

Id	Name	SBO
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	

Kinetic Law

Derived unit contains undeclared units

$$v_{44} = \text{mw3d07dc22\_f821\_49a5\_9712\_820ba9592353} \cdot [\text{mw6cb74b27\_ffef\_49bb\_8ffb\_622d55089a9e}] \quad (89)$$

Table 180: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw3d07dc22-_f821-_49a5_9712-_820ba9592353	k56		5.7		☑

6.45 Reaction mw9c208e18_c70d_4231_af0b_ad17cd0bba2d

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

Name r57

Reaction equation

$$\text{mwaff92910\_ed3d\_40b9\_a29c\_e4866167e828} + \text{mwbaaeb210\_4806\_4076\_9d60\_219f4ed945b6} \underset{(90)}{\overset{\text{mwaff92910\_ed3d\_4}}{\rightleftharpoons}}$$

Reactants

Table 181: Properties of each reactant.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mwbaaeb210_4806_4076_9d60_219f4ed945b6	Pase	

Modifiers

Table 182: Properties of each modifier.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	
mwbaaeb210_4806_4076_9d60_219f4ed945b6	Pase	
mw19a33ad5_5ba4_46c7_84eb_c1287f02bcd5	Raf1active-Pase	

Product

Table 183: Properties of each product.

Id	Name	SBO
mw19a33ad5_5ba4_46c7_84eb_c1287f02bcd5	Raf1active-Pase	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{45} = {} & \text{mwa8f70790\_9f44\_4548\_988e\_49d13016d2f1} \\ & \cdot [\text{mwaff92910\_ed3d\_40b9\_a29c\_e4866167e828}] \\ & \cdot [\text{mwbaaeb210\_4806\_4076\_9d60\_219f4ed945b6}] \\ & - \text{mwaad540b6\_783e\_4576\_8862\_ad522fd897db} \\ & \cdot [\text{mw19a33ad5\_5ba4\_46c7\_84eb\_c1287f02bcd5}] \end{aligned} \tag{91}$$

Table 184: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwa8f70790-_9f44-_4548_988e-_49d13016d2f1	k57		71.7		☑
mwaad540b6-_783e-_4576_8862-_ad522fd897db	kr57		0.2		☑

6.46 Reaction mw87711dc1_43d7_40fc_b9e9_a24e2f92419d

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

Name r58

Reaction equation

$$\text{mw19a33ad5\_5ba4\_46c7\_84eb\_c1287f02bcd5} \xrightarrow{\text{mw19a33ad5\_5ba4\_46c7\_84eb\_c1287f02bcd5}} \text{mw66ac98c4\_7e7b\_40} \tag{92}$$

Reactant

Table 185: Properties of each reactant.

Id	Name	SBO
mw19a33ad5_5ba4_46c7_84eb_c1287f02bcd5	Raf1active-Pase	

Modifier

Table 186: Properties of each modifier.

Id	Name	SBO
mw19a33ad5_5ba4_46c7_84eb_c1287f02bcd5	Raf1active-Pase	

Products

Table 187: Properties of each product.

Id	Name	SBO
mw66ac98c4_7e7b_4071_954d_43eb17584220	Raf1	
mwbaaeb210_4806_4076_9d60_219f4ed945b6	Pase	

Kinetic Law

Derived unit contains undeclared units

$$v_{46} = \text{mwfbc395b5\_05b8\_4e27\_9696\_c3ba52edaf74} \cdot [\text{mw19a33ad5\_5ba4\_46c7\_84eb\_c1287f02bcd5}] \tag{93}$$

Table 188: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwfbc395b5-_05b8-_4e27_9696-_c3ba52edaf74	k58		1.0		☑

6.47 Reaction mw4b445876_bdce_42d0_867b_fd3c74128a6b

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

Name r59

Reaction equation

$$\text{mwf816df4c\_4593\_4d23\_990f\_0d7c15ddde5d} + \text{mwf9e2a044\_7774\_400b\_a74e\_a111b4a21f30} \underset{(94)}{\rightleftharpoons} \text{mwf816df4c\_4593\_4}$$

Reactants

Table 189: Properties of each reactant.

Id	Name	SBO
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	
mwf9e2a044_7774_400b_a74e_a111b4a21f30	Pase2	

Modifiers

Table 190: Properties of each modifier.

Id	Name	SBO
mwf816df4c_4593_4d23_990f_0d7c15ddde5d	ppMEK	
mwf9e2a044_7774_400b_a74e_a111b4a21f30	Pase2	
mwcb572fe2_c3ac_40e7_8141_da7d55fce18a	ppMEK-Pase2	

Product

Table 191: Properties of each product.

Id	Name	SBO
mwcb572fe2_c3ac_40e7_8141_da7d55fce18a	ppMEK-Pase2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{47} = {} & \text{mwc489f472\_68ce\_44e7\_aad1\_f8d2f6dda4ff} \\ & \cdot [\text{mwf816df4c\_4593\_4d23\_990f\_0d7c15ddde5d}] \\ & \cdot [\text{mwf9e2a044\_7774\_400b\_a74e\_a111b4a21f30}] \\ & - \text{mw56f1bdc0\_66fd\_47c0\_806a\_beeaf123e2f2} \\ & \cdot [\text{mwcb572fe2\_c3ac\_40e7\_8141\_da7d55fce18a}] \end{aligned} \tag{95}$$

Table 192: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwc489f472_68ce_44e7_aad1_f8d2f6dda4ff	k59		14.3		☑
mw56f1bdc0_66fd_47c0_806a_beeaf123e2f2	kr59		0.8		☑

6.48 Reaction mw40950d59_1012_4361_8418_73e25758e367

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

Name r60

Reaction equation

$$\text{mwcb572fe2\_c3ac\_40e7\_8141\_da7d55fce18a} \xrightarrow{\text{mwcb572fe2\_c3ac\_40e7\_8141\_da7d55fce18a}} \text{mw9b25f809\_18a1\_4c14} \tag{96}$$

Reactant

Table 193: Properties of each reactant.

Id	Name	SBO
mwcb572fe2_c3ac_40e7_8141_da7d55fce18a	ppMEK-Pase2	

Modifier

Table 194: Properties of each modifier.

Id	Name	SBO
mwcb572fe2_c3ac_40e7_8141_da7d55fce18a	ppMEK-Pase2	

Products

Table 195: Properties of each product.

Id	Name	SBO
mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28	pMEK	
mwf9e2a044_7774_400b_a74e_a111b4a21f30	Pase2	

Kinetic Law

Derived unit contains undeclared units

$$v_{48} = \text{mwa17c895f\_29d8\_4977\_a99f\_cf9bf6216785} \cdot [\text{mwcb572fe2\_c3ac\_40e7\_8141\_da7d55fce18a}]$$

Table 196: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwa17c895f-_29d8-_4977_a99f-_cf9bf6216785	k60		0.058		☑

6.49 Reaction mwbfa79c95_487d_4c6f_b437_9e579451a419

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

Name r61

Reaction equation

$$\mathrm{mw9b25f809\_18a1\_4c14\_8f4b\_cf18e6d93c28} + \mathrm{mwf9e2a044\_7774\_400b\_a74e\_a111b4a21f30} \rightleftharpoons \mathrm{mw9b25f809\_18a1\_4} \tag{98}$$

Reactants

Table 197: Properties of each reactant.

Id	Name	SBO
mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28	pMEK	
mwf9e2a044_7774_400b_a74e_a111b4a21f30	Pase2	

Modifiers

Table 198: Properties of each modifier.

Id	Name	SBO
mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28	pMEK	
mwf9e2a044_7774_400b_a74e_a111b4a21f30	Pase2	
mwa0acc0ac_5fac_4a42_a3be_e36db44994b0	pMEK-Pase2	

Product

Table 199: Properties of each product.

Id	Name	SBO
mwa0acc0ac_5fac_4a42_a3be_e36db44994b0	pMEK-Pase2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{49} = {} & \mathrm{mwafd23622\_952d\_44b3\_a437\_4aa12422add7} \\ & \cdot [\mathrm{mw9b25f809\_18a1\_4c14\_8f4b\_cf18e6d93c28}] \\ & \cdot [\mathrm{mwf9e2a044\_7774\_400b\_a74e\_a111b4a21f30}] \\ & - \mathrm{mw9d9a7d08\_b19a\_44f1\_a806\_151597049345} \\ & \cdot [\mathrm{mwa0acc0ac\_5fac\_4a42\_a3be\_e36db44994b0}] \end{aligned} \tag{99}$$

Table 200: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwafd23622-_952d-_44b3_a437-_4aa12422add7	k61		0.25		☑
mw9d9a7d08-_b19a-_44f1_a806-_151597049345	kr61		0.50		☑

6.50 Reaction mwa4b69c77_6226_46da_b78c_3e6027d0be41

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

Name r62

Reaction equation

mwa0acc0ac_5fac_4a42_a3be_e36db44994b0 $\xrightarrow{\text{mwa0acc0ac\_5fac\_4a42\_a3be\_e36db44994b0}}$ mw0834731b_0477_421 (100)

Reactant

Table 201: Properties of each reactant.

Id	Name	SBO
mwa0acc0ac_5fac_4a42_a3be_e36db44994b0	pMEK-Pase2	

Modifier

Table 202: Properties of each modifier.

Id	Name	SBO
mwa0acc0ac_5fac_4a42_a3be_e36db44994b0	pMEK-Pase2	

Products

Table 203: Properties of each product.

Id	Name	SBO
mw0834731b_0477_4217_a53b_30cef851191b	MEK	
mwf9e2a044_7774_400b_a74e_a111b4a21f30	Pase2	

Kinetic Law

Derived unit contains undeclared units

$$v_{50} = \text{mwac85fd83\_4e73\_43f1\_9c42\_01773349d50f} \cdot [\text{mwa0acc0ac\_5fac\_4a42\_a3be\_e36db44994b0}]$$ (101)

Table 204: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwac85fd83-_4e73-_43f1_9c42-_01773349d50f	k62		0.058		☑

6.51 Reaction mwf8bb22e2_5aa3_4c25_a022_a266b1856a48

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

Name r63

Reaction equation

$$\text{mwd784228d\_0cb5\_468a\_ac70\_02d8f04b3d9c} + \text{mwd087f76b\_65dc\_47f1\_ba21\_c43774457686} \rightleftharpoons \text{mwd784228d\_0cb5\_}$$ (102)

Reactants

Table 205: Properties of each reactant.

Id	Name	SBO
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	
mwd087f76b_65dc_47f1_ba21_c43774457686	Pase3	

Modifiers

Table 206: Properties of each modifier.

Id	Name	SBO
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	
mwd087f76b_65dc_47f1_ba21_c43774457686	Pase3	
mwa7e3103a_6394_472c_b0f4_8ed527f68604	ppERK-Pase3	

Product

Table 207: Properties of each product.

Id	Name	SBO
mwa7e3103a_6394_472c_b0f4_8ed527f68604	ppERK-Pase3	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{51} = {} & \text{mwd23d026b\_c5b7\_4742\_aab9\_b9beb18ec9bc} \\ & \cdot [\text{mwd784228d\_0cb5\_468a\_ac70\_02d8f04b3d9c}] \\ & \cdot [\text{mwd087f76b\_65dc\_47f1\_ba21\_c43774457686}] \\ & - \text{mwf4c4d7a7\_1498\_4f6c\_9d72\_cd5cb012146c} \\ & \cdot [\text{mwa7e3103a\_6394\_472c\_b0f4\_8ed527f68604}] \end{aligned} \tag{103}$$

Table 208: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwd23d026b_c5b7_4742_aab9_b9beb18ec9bc	k63		7.0		☑
mwf4c4d7a7_1498_4f6c_9d72_cd5cb012146c	kr63		0.6		☑

6.52 Reaction mw61305f93_7b2d_4a2d_8d16_f7be026d8671

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

Name r64

Reaction equation

mwa7e3103a_6394_472c_b0f4_8ed527f68604 $\xrightarrow{\text{mwa7e3103a\_6394\_472c\_b0f4\_8ed527f68604}}$ mwcc894c94_0ddf_42c (104)

Reactant

Table 209: Properties of each reactant.

Id	Name	SBO
mwa7e3103a_6394_472c_b0f4_8ed527f68604	ppERK-Pase3	

Modifier

Table 210: Properties of each modifier.

Id	Name	SBO
mwa7e3103a_6394_472c_b0f4_8ed527f68604	ppERK-Pase3	

Products

Table 211: Properties of each product.

Id	Name	SBO
mwcc894c94_0ddf_42cc_913e_cdcc4d471d94	pERK	
mwd087f76b_65dc_47f1_ba21_c43774457686	Pase3	

Kinetic Law

Derived unit contains undeclared units

$v_{52} = \text{mwe3e5abe4\_9f92\_43eb\_92e4\_cea771f5bf14} \cdot [\text{mwa7e3103a\_6394\_472c\_b0f4\_8ed527f68604}]$ (105)

Table 212: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe3e5abe4-_9f92-_43eb_92e4-_cea771f5bf14	k64		0.27		☑

6.53 Reaction mwcc31b497_6c50_446c_bbc2_6c5739507252

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

Name r66

Reaction equation

$$\text{mw35f5adaa\_d1c0\_433c\_817d\_76e317f4cb15} \xrightarrow{\text{mw35f5adaa\_d1c0\_433c\_817d\_76e317f4cb15}} \text{mw7e23b961\_186b\_47a} \tag{106}$$

Reactant

Table 213: Properties of each reactant.

Id	Name	SBO
mw35f5adaa_d1c0_433c_817d_76e317f4cb15	pERK-Pase3	

Modifier

Table 214: Properties of each modifier.

Id	Name	SBO
mw35f5adaa_d1c0_433c_817d_76e317f4cb15	pERK-Pase3	

Products

Table 215: Properties of each product.

Id	Name	SBO
mw7e23b961_186b_47a0_a8b5_5e9957766792	ERK	
mwd087f76b_65dc_47f1_ba21_c43774457686	Pase3	

Kinetic Law

Derived unit contains undeclared units

$$v_{53} = \text{mwa617804d\_95cc\_4197\_a39b\_264a2c66b5a3} \cdot [\text{mw35f5adaa\_d1c0\_433c\_817d\_76e317f4cb15}] \tag{107}$$

Table 216: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwa617804d-_95cc-_4197_a39b-_264a2c66b5a3	k66		0.3		☑

6.54 Reaction mw1d8c2435_bb85_4352_a25f_82033250579e

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

Name r65

Reaction equation

$$\text{mwcc894c94\_0ddf\_42cc\_913e\_cdcc4d471d94} + \text{mwd087f76b\_65dc\_47f1\_ba21\_c43774457686} \xrightleftharpoons{\text{mwcc894c94\_0ddf\_4}} \quad (108)$$

Reactants

Table 217: Properties of each reactant.

Id	Name	SBO
mwcc894c94_0ddf_42cc_913e_cdcc4d471d94	pERK	
mwd087f76b_65dc_47f1_ba21_c43774457686	Pase3	

Modifiers

Table 218: Properties of each modifier.

Id	Name	SBO
mwcc894c94_0ddf_42cc_913e_cdcc4d471d94	pERK	
mwd087f76b_65dc_47f1_ba21_c43774457686	Pase3	
mw35f5adaa_d1c0_433c_817d_76e317f4cb15	pERK-Pase3	

Product

Table 219: Properties of each product.

Id	Name	SBO
mw35f5adaa_d1c0_433c_817d_76e317f4cb15	pERK-Pase3	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{54} = {} & \text{mw254868f8\_c9fb\_493c\_bc1d\_807cc83c18e6} \\ & \cdot [\text{mwcc894c94\_0ddf\_42cc\_913e\_cdcc4d471d94}] \\ & \cdot [\text{mwd087f76b\_65dc\_47f1\_ba21\_c43774457686}] \\ & - \text{mw78a41659\_4abc\_4614\_9e83\_38cbfe1c5262} \\ & \cdot [\text{mw35f5adaa\_d1c0\_433c\_817d\_76e317f4cb15}] \end{aligned} \tag{109}$$

Table 220: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw254868f8_c9fb_493c_bc1d_807cc83c18e6	k65		5.0		☑
mw78a41659_4abc_4614_9e83_38cbfe1c5262	kr65		0.5		☑

6.55 Reaction mw8dec1159_1925_45d9_af25_3cb709a5017c

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

Name r67

Reaction equation

$$\text{mwd784228d\_0cb5\_468a\_ac70\_02d8f04b3d9c} + \text{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21} \rightleftharpoons \text{mwd784228d\_0cb5\_4} \tag{110}$$

Reactants

Table 221: Properties of each reactant.

Id	Name	SBO
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	

Modifiers

Table 222: Properties of each modifier.

Id	Name	SBO
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	
mw5babe3d5_a9af_4dfd_ac01_35474ef64af2	ppERK-pEGF-EGFR2-pShc-Grb2-SOS	

Product

Table 223: Properties of each product.

Id	Name	SBO
mw5babe3d5_a9af_4dfd_ac01_35474ef64af2	ppERK-pEGF-EGFR2-pShc-Grb2-SOS	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{55} = {} & \text{mwbc2119ce\_ade3\_4e2a\_a3bc\_a29cd77adf72} \\ & \cdot [\text{mwd784228d\_0cb5\_468a\_ac70\_02d8f04b3d9c}] \\ & \cdot [\text{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21}] \\ & - \text{mw54b0e5e9\_710f\_438e\_a8d3\_749c594667bc} \\ & \cdot [\text{mw5babe3d5\_a9af\_4dfd\_ac01\_35474ef64af2}] \end{aligned} \tag{111}$$

Table 224: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwbc2119ce_ade3_4e2a_a3bc_a29cd77adf72	k67		8.898		☑

Id	Name	SBO	Value	Unit	Constant
mw54b0e5e9-_710f-_438e_a8d3-_749c594667bc	kr67		1.000		☑

6.56 Reaction mwcf9f1b1d_e19a_4fa8_85ba_8f17e2cec730

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

Name r68

Reaction equation

mw5babe3d5_a9af_4dfd_ac01_35474ef64af2 $\xrightarrow{\text{mw5babe3d5\_a9af\_4dfd\_ac01\_35474ef64af2}}$ mwd784228d_0cb5_468a (112)

Reactant

Table 225: Properties of each reactant.

Id	Name	SBO
mw5babe3d5_a9af_4dfd_ac01_35474ef64af2	ppERK-pEGF-EGFR2-pShc-Grb2-SOS	

Modifier

Table 226: Properties of each modifier.

Id	Name	SBO
mw5babe3d5_a9af_4dfd_ac01_35474ef64af2	ppERK-pEGF-EGFR2-pShc-Grb2-SOS	

Products

Table 227: Properties of each product.

Id	Name	SBO
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	
mw31ac308f_da36_4f73_830f_67f3e5b945d9	pSOS	

Id	Name	SBO

Kinetic Law

Derived unit contains undeclared units

$$v_{56} = \text{mw1ddaf9f4\_dcab\_4dc2\_a6fa\_5ce85b9d7a3a} \cdot [\text{mw5babe3d5\_a9af\_4dfd\_ac01\_35474ef643f2}]$$

Table 228: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw1ddaf9f4-_dcab-_4dc2_a6fa-_5ce85b9d7a3a	k68		0.043		☑

6.57 Reaction mwa5c135b4_77e2_4411_98e1_2000c39d4b30

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

Name r69

Reaction equation

$$\text{mwd784228d\_0cb5\_468a\_ac70\_02d8f04b3d9c} + \text{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6} \rightleftharpoons \text{mwd784228d\_0cb5\_4} \quad (114)$$

Reactants

Table 229: Properties of each reactant.

Id	Name	SBO
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	

Modifiers

Table 230: Properties of each modifier.

Id	Name	SBO
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	

Id	Name	SBO
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	
mw31261227_9cd6_4059_a0bb_04dbf4888080	ppERK-pEGF-EGFR2-Grb2-SOS	

Product

Table 231: Properties of each product.

Id	Name	SBO
mw31261227_9cd6_4059_a0bb_04dbf4888080	ppERK-pEGF-EGFR2-Grb2-SOS	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{57} = {} & \text{mw60892818\_7ef4\_4f65\_8003\_9700a708c66c} \\ & \cdot [\text{mwd784228d\_0cb5\_468a\_ac70\_02d8f04b3d9c}] \\ & \cdot [\text{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6}] \\ & - \text{mw6843d346\_6e9f\_43d5\_97f6\_1059f164aa16} \\ & \cdot [\text{mw31261227\_9cd6\_4059\_a0bb\_04dbf4888080}] \end{aligned} \tag{115}$$

Table 232: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw60892818-_7ef4-_4f65_8003-_9700a708c66c	k69		8.898		☑
mw6843d346-_6e9f-_43d5_97f6-_1059f164aa16	kr69		1.000		☑

6.58 Reaction mw4685274a_2b55_429f_927f_3fd863592af6

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

Name r70

Reaction equation

$$\text{mw31261227\_9cd6\_4059\_a0bb\_04dbf4888080} \xrightarrow{\text{mw31261227\_9cd6\_4059\_a0bb\_04dbf4888080}} \text{mwd784228d\_0cb5\_4} \tag{116}$$

Reactant

Table 233: Properties of each reactant.

Id	Name	SBO
mw31261227_9cd6_4059_a0bb_04dbf4888080	ppERK-pEGF-EGFR2-Grb2-SOS	

Modifier

Table 234: Properties of each modifier.

Id	Name	SBO
mw31261227_9cd6_4059_a0bb_04dbf4888080	ppERK-pEGF-EGFR2-Grb2-SOS	

Products

Table 235: Properties of each product.

Id	Name	SBO
mwd784228d_0cb5_468a_ac70_02d8f04b3d9c	ppERK	
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwf430a579_ecbf_48ba_80c2_06e455808f2a	Grb2	
mw31ac308f_da36_4f73_830f_67f3e5b945d9	pSOS	

Kinetic Law

Derived unit contains undeclared units

$$v_{58} = \text{mwdaa378da\_64fe\_4ea4\_b79d\_c25733837b9f} \cdot [\text{mw31261227\_9cd6\_4059\_a0bb\_04dbf4888080}] \tag{117}$$

Table 236: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwdaa378da-_64fe-_4ea4_b79d-_c25733837b9f	k70		0.043		☑

6.59 Reaction mw8e331e43_16b4_478d_880b_d5a3244540e4

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

Name r71

Reaction equation

$$\text{mw31ac308f\_da36\_4f73\_830f\_67f3e5b945d9} \xrightarrow{\text{mw31ac308f\_da36\_4f73\_830f\_67f3e5b945d9}} \text{mw9dcaa655\_a755\_426e} \quad (118)$$

Reactant

Table 237: Properties of each reactant.

Id	Name	SBO
mw31ac308f_da36_4f73_830f_67f3e5b945d9	pSOS	

Modifier

Table 238: Properties of each modifier.

Id	Name	SBO
mw31ac308f_da36_4f73_830f_67f3e5b945d9	pSOS	

Product

Table 239: Properties of each product.

Id	Name	SBO
mw9dcaa655_a755_426e_a3fa_1ad7c3c45575	SOS	

Kinetic Law

Derived unit contains undeclared units

$$v_{59} = \text{mw3f5e2165\_9bb6\_4ac3\_992e\_50943dd2ea05} \cdot [\text{mw31ac308f\_da36\_4f73\_830f\_67f3e5b945d9}] \tag{119}$$

Table 240: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw3f5e2165-_9bb6-_4ac3_992e-_50943dd2ea05	k71		0.002		☑

6.60 Reaction mw47dee769_daa0_4af4_978a_5ab17e504c2f

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

Name r72

Reaction equation

$$\text{mw0a0ca6ba\_cb28\_44c7\_a0c0\_1593cb720966} \xrightarrow{\text{mw0a0ca6ba\_cb28\_44c7\_a0c0\_1593cb720966}} \text{mw93907b2d\_53db\_40} \tag{120}$$

Reactant

Table 241: Properties of each reactant.

Id	Name	SBO
mw0a0ca6ba_cb28_44c7_a0c0_1593cb720966	ProEGFR	

Modifier

Table 242: Properties of each modifier.

Id	Name	SBO
mw0a0ca6ba_cb28_44c7_a0c0_1593cb720966	ProEGFR	

Product

Table 243: Properties of each product.

Id	Name	SBO
mw93907b2d_53db_4080_9e3f_3eb304441ab9	EGFR	

Kinetic Law

Derived unit contains undeclared units

$$v_{60} = \text{mwe49ede89\_014e\_40f2\_acfd\_0d1a0cd11fe7} \cdot [\text{mw0a0ca6ba\_cb28\_44c7\_a0c0\_1593cb720966}] \quad (121)$$

Table 244: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe49ede89-_014e-_40f2_acfd-_0d1a0cd11fe7	k72		0.005		☑

6.61 Reaction mwbd8a133e_1b70_44e8_bef8_78b14141166b

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

Name r73

Reaction equation

$$\text{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21} + \text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b} \rightleftharpoons \text{mwfbda4e09\_0cbb\_4} \quad (122)$$

Reactants

Table 245: Properties of each reactant.

Id	Name	SBO
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	

Modifiers

Table 246: Properties of each modifier.

Id	Name	SBO
mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21	pEGF-EGFR2-pShc-Grb2-SOS	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mwb1bc2058_e6d8_4680_9e6c_d27bb366cde0	pEGF-EGFR2-pShc-Grb2-SOS-cbl	

Product

Table 247: Properties of each product.

Id	Name	SBO
mwb1bc2058_e6d8_4680_9e6c_d27bb366cde0	pEGF-EGFR2-pShc-Grb2-SOS-cbl	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{61} = {} & \text{mw90873203\_7a5d\_4fca\_a789\_5e989ff0c999} \\ & \cdot [\text{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21}] \\ & \cdot [\text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b}] \\ & - \text{mw92d81b3b\_fa59\_4637\_8540\_8cb8482490d9} \\ & \cdot [\text{mwb1bc2058\_e6d8\_4680\_9e6c\_d27bb366cde0}] \end{aligned} \tag{123}$$

Table 248: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw90873203-_7a5d-_4fca_a789-_5e989ff0c999	k73		0.200		☑
mw92d81b3b-_fa59-_4637_8540-_8cb8482490d9	k73r		0.003		☑

6.62 Reaction mw3a87ca5a_845d_4ac4_8806_e343cbbfc630

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

Name r74

Reaction equation

$$\text{mwb1bc2058\_e6d8\_4680\_9e6c\_d27bb366cde0} + \text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57} \underset{(124)}{\rightleftharpoons} \text{mwb1bc2058\_e6d8\_}$$

Reactants

Table 249: Properties of each reactant.

Id	Name	SBO
mwb1bc2058_e6d8_4680_9e6c_d27bb366cde0	pEGF-EGFR2-pShc-Grb2-SOS-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Modifiers

Table 250: Properties of each modifier.

Id	Name	SBO
mwb1bc2058_e6d8_4680_9e6c_d27bb366cde0	pEGF-EGFR2-pShc-Grb2-SOS-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	
mw06b8aada_c92a_48eb_8ee7_af3778cfe62f	pEGF-EGFR2-pShc-Grb2-SOS-cbl-EPn	

Product

Table 251: Properties of each product.

Id	Name	SBO
mw06b8aada_c92a_48eb_8ee7_af3778cfe62f	pEGF-EGFR2-pShc-Grb2-SOS-cbl-EPn	

Kinetic Law

Derived unit contains undeclared units

$$
\begin{aligned}
v_{62} = {} & \text{mwcc2a950d\_261b\_4fd7\_9c08\_9f3c194ba09d} \\
& \cdot [\text{mwb1bc2058\_e6d8\_4680\_9e6c\_d27bb366cde0}] \\
& \cdot [\text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57}] \\
& - \text{mw1351daea\_68be\_404a\_b7b0\_105920ff3371} \\
& \cdot [\text{mw06b8aada\_c92a\_48eb\_8ee7\_af3778cfe62f}]
\end{aligned}
\tag{125}
$$

Table 252: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwcc2a950d-_261b-_4fd7_9c08-_9f3c194ba09d	k74		2.00		☑
mw1351daea-_68be-_404a_b7b0-_105920ff3371	k74r		0.05		☑

6.63 Reaction mw363a5271_1f51_4d5e_87a7_42ea25cb5657

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

Name r75

Reaction equation

$$
\text{mw06b8aada\_c92a\_48eb\_8ee7\_af3778cfe62f} \xrightarrow{\text{mw06b8aada\_c92a\_48eb\_8ee7\_af3778cfe62f}} \text{mw19122f7d\_f92e\_4dc0\_}
\tag{126}
$$

Reactant

Table 253: Properties of each reactant.

Id	Name	SBO
mw06b8aada_c92a_48eb_8ee7_af3778cfe62f	pEGF-EGFR2-pShc-Grb2-SOS-cbl-EPn	

Modifier

Table 254: Properties of each modifier.

Id	Name	SBO
mw06b8aada_c92a_48eb_8ee7_af3778cfe62f	pEGF-EGFR2-pShc-Grb2-SOS-cbl-EPn	

Products

Table 255: Properties of each product.

Id	Name	SBO
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mw1093b3af_1864_4ba3_a541_6009a9921282	Grb2-SOS	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	
mwa0349407_8187_48fc_9e94_5698ccc4e06d	pShc	

Kinetic Law

Derived unit contains undeclared units

$$v_{63} = \text{mwc6b3c76f\_af7b\_488c\_8751\_28f1d9ab90a1} \cdot [\text{mw06b8aada\_c92a\_48eb\_8ee7\_af3778cfe62f}]$$ (126)

Table 256: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwc6b3c76f-_af7b-_488c_8751-_28f1d9ab90a1	k75		$5 \cdot 10^{-4}$		☑

6.64 Reaction mw6bee0112_92dc_4169_9109_2633772b3aa4

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

Name r76

Reaction equation

$$\text{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6} + \text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b} \rightleftharpoons \text{mwf8cc7834\_bf4f\_4cc}$$ (128)

Reactants

Table 257: Properties of each reactant.

Id	Name	SBO
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	

Modifiers

Table 258: Properties of each modifier.

Id	Name	SBO
mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6	pEGF-EGFR2-Grb2-SOS	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mw481cd12b_61ba_44e5_93bf_8b88c6c4a4e7	pEGF-EGFR2-Grb2-SOS-cbl	

Product

Table 259: Properties of each product.

Id	Name	SBO
mw481cd12b_61ba_44e5_93bf_8b88c6c4a4e7	pEGF-EGFR2-Grb2-SOS-cbl	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{64} = {} & \text{mwf9c81339\_e73a\_45b5\_a714\_0854b718d44f} \\ & \cdot [\text{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6}] \\ & \cdot [\text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b}] \\ & - \text{mw587125c7\_6092\_4627\_9cdd\_2415b77a8307} \\ & \cdot [\text{mw481cd12b\_61ba\_44e5\_93bf\_8b88c6c4a4e7}] \end{aligned} \tag{129}$$

Table 260: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwf9c81339-_e73a-_45b5_a714-_0854b718d44f	k76		0.200		☑

Id	Name	SBO	Value	Unit	Constant
mw587125c7-_6092-_4627_9cdd-_2415b77a8307	k76r		0.003		☑

6.65 Reaction mwbac9e6ff_2df1_45eb_b3f4_4cae74c64014

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

Name r77

Reaction equation

$$\text{mw481cd12b\_61ba\_44e5\_93bf\_8b88c6c4a4e7} + \text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57} \overset{\text{mw481cd12b\_61ba\_}}{\underset{(130)}{\rightleftharpoons}}$$

Reactants

Table 261: Properties of each reactant.

Id	Name	SBO
mw481cd12b_61ba_44e5_93bf_8b88c6c4a4e7	pEGF-EGFR2-Grb2-SOS-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Modifiers

Table 262: Properties of each modifier.

Id	Name	SBO
mw481cd12b_61ba_44e5_93bf_8b88c6c4a4e7	pEGF-EGFR2-Grb2-SOS-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	
mw1d5948e7_5504_4224_9d71_227911b4f1ee	pEGF-EGFR2-Grb2-SOS-cbl-EPn	

Product

Table 263: Properties of each product.

Id	Name	SBO
mw1d5948e7_5504_4224_9d71_227911b4f1ee	pEGF-EGFR2-Grb2-SOS-cbl-EPn	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{65} = {} & \text{mwa575cf96\_3d57\_4222\_ac71\_bd17006ef035} \\ & \cdot [\text{mw481cd12b\_61ba\_44e5\_93bf\_8b88c6c4a4e7}] \\ & \cdot [\text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57}] \\ & - \text{mwf7658bc6\_acb6\_411e\_ae2c\_9d8de7738d5f} \\ & \cdot [\text{mw1d5948e7\_5504\_4224\_9d71\_227911b4f1ee}] \end{aligned} \tag{131}$$

Table 264: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwa575cf96-_3d57-_4222_ac71-_bd17006ef035	k77		2.00		☑
mwf7658bc6-_acb6-_411e_ae2c-_9d8de7738d5f	k77r		0.05		☑

6.66 Reaction mweb93165f_cf03_48f1_b035_59d79e324314

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

Name r78

Reaction equation

$$\text{mw1d5948e7\_5504\_4224\_9d71\_227911b4f1ee} \xrightarrow{\text{mw1d5948e7\_5504\_4224\_9d71\_227911b4f1ee}} \text{mw19122f7d\_f92e\_4c} \tag{132}$$

Reactant

Table 265: Properties of each reactant.

Id	Name	SBO
mw1d5948e7_5504_4224_9d71_227911b4f1ee	pEGF-EGFR2-Grb2-SOS-cbl-EPn	

Modifier

Table 266: Properties of each modifier.

Id	Name	SBO
mw1d5948e7_5504_4224_9d71_227911b4f1ee	pEGF-EGFR2-Grb2-SOS-cbl-EPn	

Products

Table 267: Properties of each product.

Id	Name	SBO
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mw1093b3af_1864_4ba3_a541_6009a9921282	Grb2-SOS	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Kinetic Law

Derived unit contains undeclared units

$$v_{66} = \text{mwa137184a\_0eb0\_4bcb\_971c\_8e19231b2c07} \cdot [\text{mw1d5948e7\_5504\_4224\_9d71\_227911b4f1ee}] \tag{133}$$

Table 268: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwa137184a-_0eb0-_4bcb_971c-_8e19231b2c07	k78		$5 \cdot 10^{-4}$		☑

6.67 Reaction mw85e457d1_73f8_4236_bb61_a128d300003f

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

Name r79

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b} \rightleftharpoons \text{mwbfcf6773\_1915\_4} \tag{134}$$

Reactants

Table 269: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	

Modifiers

Table 270: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mwec1b368b_8f73_47eb_9636_9956389836eb	pEGF-EGFR2-cbl	

Product

Table 271: Properties of each product.

Id	Name	SBO
mwec1b368b_8f73_47eb_9636_9956389836eb	pEGF-EGFR2-cbl	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{67} = {} & \text{mwfa680314\_051c\_4b10\_afc9\_7e7fbee49e3f} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b}] \\ & - \text{mw97b9ab43\_02ae\_4e42\_a524\_6b781633a255} \\ & \cdot [\text{mwec1b368b\_8f73\_47eb\_9636\_9956389836eb}] \end{aligned} \tag{135}$$

Table 272: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwfa680314-_051c-_4b10_afc9-_7e7fbee49e3f	k79		0.200		☑
mw97b9ab43-_02ae-_4e42_a524-_6b781633a255	k79r		$5 \cdot 10^{-4}$		☑

6.68 Reaction mw6b159c8f_eee0_4337_b711_2e230c9e2cf6

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

Name r80

Reaction equation

mwec1b368b_8f73_47eb_9636_9956389836eb + mwb2366216_0b3c_4f28_8303_fec92c68dd57 $\rightleftharpoons$ mwec1b368b_8f73_

(136)

Reactants

Table 273: Properties of each reactant.

Id	Name	SBO
mwec1b368b_8f73_47eb_9636_9956389836eb	pEGF-EGFR2-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Modifiers

Table 274: Properties of each modifier.

Id	Name	SBO
mwec1b368b_8f73_47eb_9636_9956389836eb	pEGF-EGFR2-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	
mwa455ec7e_1a12_4659_95a2_a5695d09ca60	pEGF-EGFR2-cbl-EPn	

Product

Table 275: Properties of each product.

Id	Name	SBO
mwa455ec7e_1a12_4659_95a2_a5695d09ca60	pEGF-EGFR2-cbl-EPn	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{68} = {} & \text{mwcc0d3fcd\_9b9e\_4390\_b588\_e57b57d89d22} \\ & \cdot [\text{mwec1b368b\_8f73\_47eb\_9636\_9956389836eb}] \\ & \cdot [\text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57}] \\ & - \text{mw56f1be7e\_e303\_4a72\_be17\_5bd08e3eb1f2} \\ & \cdot [\text{mwa455ec7e\_1a12\_4659\_95a2\_a5695d09ca60}] \end{aligned} \tag{137}$$

Table 276: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwcc0d3fcd-_9b9e-_4390_b588-_e57b57d89d22	k80		2.00		☑
mw56f1be7e-_e303-_4a72_be17-_5bd08e3eb1f2	kr80		0.05		☑

6.69 Reaction mwc9b3b248_3290_452a_9b7c_8fdada3e6687

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

Name r81

Reaction equation

$$\text{mwa455ec7e\_1a12\_4659\_95a2\_a5695d09ca60} \xrightarrow{\text{mwa455ec7e\_1a12\_4659\_95a2\_a5695d09ca60}} \text{mw19122f7d\_f92e\_4d} \tag{138}$$

Reactant

Table 277: Properties of each reactant.

Id	Name	SBO
mwa455ec7e_1a12_4659_95a2_a5695d09ca60	pEGF-EGFR2-cbl-EPn	

Modifier

Table 278: Properties of each modifier.

Id	Name	SBO
mwa455ec7e_1a12_4659_95a2_a5695d09ca60	pEGF-EGFR2-cbl-EPn	

Products

Table 279: Properties of each product.

Id	Name	SBO
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Kinetic Law

Derived unit contains undeclared units

$$v_{69} = \text{mw1decb177\_5075\_41f3\_a348\_ca13b8f4497e} \cdot [\text{mwa455ec7e\_1a12\_4659\_95a2\_a5695d09ca60}] \tag{139}$$

Table 280: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw1decb177-_5075-_41f3_a348-_ca13b8f4497e	k81		$5 \cdot 10^{-4}$		☑

6.70 Reaction mw77484632_4e33_468a_9937_24e9bfd0e17d

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

Name r82

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mw2ba1db9a\_4483\_44fa\_a3a2\_b4a5ea66898c} \rightleftharpoons \text{mwbfcf6773\_1915\_4} \tag{140}$$

Reactants

Table 281: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw2ba1db9a_4483_44fa_a3a2_b4a5ea66898c	PI3K	

Modifiers

Table 282: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw2ba1db9a_4483_44fa_a3a2_b4a5ea66898c	PI3K	
mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5	pEGF-EGFR2-PI3K	

Product

Table 283: Properties of each product.

Id	Name	SBO
mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5	pEGF-EGFR2-PI3K	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{70} = {} & \text{mw001b8124\_b461\_482a\_8c8e\_30bffc6718f7} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mw2ba1db9a\_4483\_44fa\_a3a2\_b4a5ea66898c}] \\ & - \text{mw40eca7d6\_80b2\_4926\_9c2f\_330422db0814} \\ & \cdot [\text{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5}] \end{aligned} \tag{141}$$

Table 284: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw001b8124-_b461-_482a_8c8e-_30bffc6718f7	k82		14.000		☑
mw40eca7d6-_80b2-_4926_9c2f-_330422db0814	kr82		0.174		☑

6.71 Reaction mw2c5858f3_0988_49b0_a94a_057853b84e91

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

Name r83

Reaction equation

mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5 $\overset{\text{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5, mw1e591998\_65c0\_484e}}{\rightleftharpoons}$

(142)

Reactant

Table 285: Properties of each reactant.

Id	Name	SBO
mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5	pEGF-EGFR2-PI3K	

Modifiers

Table 286: Properties of each modifier.

Id	Name	SBO
mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5	pEGF-EGFR2-PI3K	
mw1e591998_65c0_484e_8a3b_537a38d94de1	pEGF-EGFR2-pPI3K	

Product

Table 287: Properties of each product.

Id	Name	SBO
mw1e591998_65c0_484e_8a3b_537a38d94de1	pEGF-EGFR2-pPI3K	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{71} = {} & \text{mwf3d00ca5\_89dc\_4693\_92ec\_a47db8150144} \\ & \cdot [\text{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5}] \\ & - \text{mw91a84697\_3231\_4fa6\_b6ff\_d69ee86056dc} \\ & \cdot [\text{mw1e591998\_65c0\_484e\_8a3b\_537a38d94de1}] \end{aligned} \tag{143}$$

Table 288: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwf3d00ca5-_89dc-_4693_92ec-_a47db8150144	k83		33.720		☑
mw91a84697-_3231-_4fa6_b6ff-_d69ee86056dc	kr83		$3.372 \cdot 10^{-4}$		☑

6.72 Reaction mwd3a36af9_3ccc_4bb1_9867_3b9823ba4ac8

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

Name r84

Reaction equation

$$\text{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5} \xrightleftharpoons{\text{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5, mwbfcf6773\_1915\_432c\_}} \tag{144}$$

Reactant

Table 289: Properties of each reactant.

Id	Name	SBO
mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5	pEGF-EGFR2-PI3K	

Modifiers

Table 290: Properties of each modifier.

Id	Name	SBO
mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5	pEGF-EGFR2-PI3K	
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c	pPI3K	

Products

Table 291: Properties of each product.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c	pPI3K	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{72} = {} & \text{mw901b5284\_bdae\_4040\_b77d\_10f1ec267f06} \\ & \cdot [\text{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5}] \\ & - \text{mw94cadd24\_0432\_4f89\_a6fc\_96cb0475c44e} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mw78e207c4\_4faf\_4b48\_8e22\_1ee666e9cc4c}] \end{aligned} \tag{145}$$

Table 292: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw901b5284-_bdae-_4040_b77d-_10f1ec267f06	k84		0.090		☑

Id	Name	SBO	Value	Unit	Constant
mw94cadd24-_0432-_4f89_a6fc-_96cb0475c44e	kr84		0.176		☑

6.73 Reaction mw9f000f29_2512_4d4a_9dd9_e59aaf296d31

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

Name r85

Reaction equation

$$\text{mwfc4a9c3d\_3ebb\_4033\_8b7d\_f4d7613d2078} + \text{mw78e207c4\_4faf\_4b48\_8e22\_1ee666e9cc4c} \underset{(146)}{\overset{\text{mwfc4a9c3d\_3ebb\_40}}{\rightleftharpoons}}$$

Reactants

Table 293: Properties of each reactant.

Id	Name	SBO
mwfc4a9c3d_3ebb_4033_8b7d_f4d7613d2078	TP4	
mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c	pPI3K	

Modifiers

Table 294: Properties of each modifier.

Id	Name	SBO
mwfc4a9c3d_3ebb_4033_8b7d_f4d7613d2078	TP4	
mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c	pPI3K	
mwbd6bb050_89bd_41df_8cea_d2e1fb77bafe	TP4-pPI3K	

Product

Table 295: Properties of each product.

Id	Name	SBO
mwbd6bb050_89bd_41df_8cea_d2e1fb77bafe	TP4-pPI3K	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{73} = {} & \text{mw688106ee\_719d\_4995\_b1a0\_faeefdb0af5a} \\ & \cdot [\text{mwfc4a9c3d\_3ebb\_4033\_8b7d\_f4d7613d2078}] \\ & \cdot [\text{mw78e207c4\_4faf\_4b48\_8e22\_1ee666e9cc4c}] \\ & - \text{mw85c8ff7d\_8d7c\_4403\_8a58\_4996a3e6ac28} \\ & \cdot [\text{mwbd6bb050\_89bd\_41df\_8cea\_d2e1fb77bafe}] \end{aligned} \tag{147}$$

Table 296: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw688106ee-_719d-_4995_b1a0-_faeefdb0af5a	k85		1.000		☑
mw85c8ff7d-_8d7c-_4403_8a58-_4996a3e6ac28	kr85		0.038		☑

6.74 Reaction mw837b5ad7_4a8c_4c55_94ff_0fdd63048044

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

Name r86

Reaction equation

$$\text{mwbd6bb050\_89bd\_41df\_8cea\_d2e1fb77bafe} \xrightarrow{\text{mwbd6bb050\_89bd\_41df\_8cea\_d2e1fb77bafe}} \text{mw7033dfd6\_53c5\_433} \tag{148}$$

Reactant

Table 297: Properties of each reactant.

Id	Name	SBO
mwbd6bb050_89bd_41df_8cea_d2e1fb77bafe	TP4-pPI3K	

Modifier

Table 298: Properties of each modifier.

Id	Name	SBO
mwbd6bb050_89bd_41df_8cea_d2e1fb77bafe	TP4-pPI3K	

Product

Table 299: Properties of each product.

Id	Name	SBO
mw7033dfd6_53c5_433b_a132_f8cb34dea20f	TP4-PI3K	

Kinetic Law

Derived unit contains undeclared units

$$v_{74} = \text{mw4f6f44d9\_408e\_49b2\_bedf\_d34b2448725e} \cdot [\text{mwbd6bb050\_89bd\_41df\_8cea\_d2e1fb77bafe}] \tag{149}$$

Table 300: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw4f6f44d9-_408e-_49b2_bedf-_d34b2448725e	k86		0.595		☑

6.75 Reaction mwd15926b3_069a_4b16_a6fc_c0c15083d621

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

Name r87

Reaction equation

$$\text{mw7033dfd6\_53c5\_433b\_a132\_f8cb34dea20f} \xrightleftharpoons{\text{mw7033dfd6\_53c5\_433b\_a132\_f8cb34dea20f, mwfc4a9c3d\_3ebb\_403}} \tag{150}$$

Reactant

Table 301: Properties of each reactant.

Id	Name	SBO
mw7033dfd6_53c5_433b_a132_f8cb34dea20f	TP4-PI3K	

Modifiers

Table 302: Properties of each modifier.

Id	Name	SBO
mw7033dfd6_53c5_433b_a132_f8cb34dea20f	TP4-PI3K	
mwfc4a9c3d_3ebb_4033_8b7d_f4d7613d2078	TP4	
mw2ba1db9a_4483_44fa_a3a2_b4a5ea66898c	PI3K	

Products

Table 303: Properties of each product.

Id	Name	SBO
mwfc4a9c3d_3ebb_4033_8b7d_f4d7613d2078	TP4	
mw2ba1db9a_4483_44fa_a3a2_b4a5ea66898c	PI3K	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{75} = {} & \text{mwd3e2533f\_8d57\_407c\_834d\_e0dde30b7f4a} \\ & \cdot [\text{mw7033dfd6\_53c5\_433b\_a132\_f8cb34dea20f}] \\ & - \text{mwbd416b7b\_f9b6\_4464\_b9e8\_be4ac001d13d} \\ & \cdot [\text{mwfc4a9c3d\_3ebb\_4033\_8b7d\_f4d7613d2078}] \\ & \cdot [\text{mw2ba1db9a\_4483\_44fa\_a3a2\_b4a5ea66898c}] \end{aligned} \tag{151}$$

Table 304: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwd3e2533f-_8d57-_407c_834d-_e0dde30b7f4a	k87		$4.7 \cdot 10^{-6}$		☑

Id	Name	SBO	Value	Unit	Constant
mwbd416b7b-_f9b6-_4464_b9e8-_be4ac001d13d	kr87		$2.297 \cdot 10^{-6}$		☑

6.76 Reaction mw3a5e0932_d50f_4fe6_b8cb_0ad649f305b0

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

Name r88

Reaction equation

mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c + mwb561d9f3_a9ed_4bdb_8d40_87be5cc3237a $\overset{\text{mw78e207c4\_4faf\_4b}}{\underset{(152)}{\rightleftharpoons}}$

Reactants

Table 305: Properties of each reactant.

Id	Name	SBO
mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c	pPI3K	
mwb561d9f3_a9ed_4bdb_8d40_87be5cc3237a	PIP2	

Modifiers

Table 306: Properties of each modifier.

Id	Name	SBO
mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c	pPI3K	
mwb561d9f3_a9ed_4bdb_8d40_87be5cc3237a	PIP2	
mw014cc419_b720_4b90_9192_2ec6e706c87d	pPI3K-PIP2	

Product

Table 307: Properties of each product.

Id	Name	SBO
mw014cc419_b720_4b90_9192_2ec6e706c87d	pPI3K-PIP2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{76} = {} & \text{mw64664eb9\_353a\_4f1d\_a8dc\_e22bcb06e2c2} \\ & \cdot [\text{mw78e207c4\_4faf\_4b48\_8e22\_1ee666e9cc4c}] \\ & \cdot [\text{mwb561d9f3\_a9ed\_4bdb\_8d40\_87be5cc3237a}] \\ & - \text{mw0573df9d\_f365\_40b7\_83d4\_3846a05aefdc} \\ & \cdot [\text{mw014cc419\_b720\_4b90\_9192\_2ec6e706c87d}] \end{aligned} \tag{153}$$

Table 308: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw64664eb9-_353a-_4f1d_a8dc-_e22bcb06e2c2	k88		25.0		☑
mw0573df9d-_f365-_40b7_83d4-_3846a05aefdc	kr88		3.5		☑

6.77 Reaction mw5dcc8719_3180_4bd0_8797_08e256131961

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

Name r89

Reaction equation

$$\text{mw014cc419\_b720\_4b90\_9192\_2ec6e706c87d} \xrightarrow{\text{mw014cc419\_b720\_4b90\_9192\_2ec6e706c87d}} \text{mw78e207c4\_4faf\_4b} \tag{154}$$

Reactant

Table 309: Properties of each reactant.

Id	Name	SBO
mw014cc419_b720_4b90_9192_2ec6e706c87d	pPI3K-PIP2	

Modifier

Table 310: Properties of each modifier.

Id	Name	SBO
mw014cc419_b720_4b90_9192_2ec6e706c87d	pPI3K-PIP2	

Products

Table 311: Properties of each product.

Id	Name	SBO
mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c	pPI3K	
mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	PIP3	

Kinetic Law

Derived unit contains undeclared units

$$v_{77} = \text{mw134431c3\_e8e5\_4375\_89a0\_2c51a03d65dd} \cdot [\text{mw014cc419\_b720\_4b90\_9192\_2ec6e706c87d}] \quad (155)$$

Table 312: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw134431c3-_e8e5-_4375_89a0-_2c51a03d65dd	k89		25.0		☑

6.78 Reaction mw376b0685_ef73_4fcc_94af_2ada24cf8a8b

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

Name r90

Reaction equation

$$\text{mwcef73e0e\_d195\_4077\_ae71\_723664ee1602} + \text{mwd7f41594\_8377\_4e2e\_9528\_45d5a82ffdb4} \rightleftharpoons \text{mwcef73e0e\_d195\_4} \quad (156)$$

Reactants

Table 313: Properties of each reactant.

Id	Name	SBO
mwcef73e0e_d195_4077_ae71_723664ee1602	Akt	
mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	PIP3	

Modifiers

Table 314: Properties of each modifier.

Id	Name	SBO
mwcef73e0e_d195_4077_ae71_723664ee1602	Akt	
mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	PIP3	
mw62bf5275_ce02_4e86_b3b6_3f87a335e1de	Aktm	

Product

Table 315: Properties of each product.

Id	Name	SBO
mw62bf5275_ce02_4e86_b3b6_3f87a335e1de	Aktm	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{78} = {} & \text{mw22510791\_ef7e\_4373\_907c\_9eecbc8adda7} \\ & \cdot [\text{mwcef73e0e\_d195\_4077\_ae71\_723664ee1602}] \\ & \cdot [\text{mwd7f41594\_8377\_4e2e\_9528\_45d5a82ffdb4}] \\ & - \text{mwf59d397b\_cfee\_4a84\_9279\_134cc951db8c} \\ & \cdot [\text{mw62bf5275\_ce02\_4e86\_b3b6\_3f87a335e1de}] \end{aligned} \tag{157}$$

Table 316: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw22510791-_ef7e-_4373_907c-_9eecbc8adda7	k90		10.0		☑

Id	Name	SBO	Value	Unit	Constant
mwf59d397b-_cfee-_4a84_9279-_134cc951db8c	kr90		1.0		☑

6.79 Reaction mwcc7cfa9c_4945_403a_938e_b237c371a5ef

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

Name r91

Reaction equation

$$\text{mw62bf5275\_ce02\_4e86\_b3b6\_3f87a335e1de} + \text{mw6e01967b\_3e2a\_433d\_bec6\_9f9cf3ba243c} \underset{(158)}{\overset{\text{mw62bf5275\_ce02\_4}}{\rightleftharpoons}}$$

Reactants

Table 317: Properties of each reactant.

Id	Name	SBO
mw62bf5275_ce02_4e86_b3b6_3f87a335e1de	Aktm	
mw6e01967b_3e2a_433d_bec6_9f9cf3ba243c	PDK1	

Modifiers

Table 318: Properties of each modifier.

Id	Name	SBO
mw62bf5275_ce02_4e86_b3b6_3f87a335e1de	Aktm	
mw6e01967b_3e2a_433d_bec6_9f9cf3ba243c	PDK1	
mw6353aa36_d4a4_4254_8a1f_1f7f571d4233	Aktm-PDK1	

Product

Table 319: Properties of each product.

Id	Name	SBO
mw6353aa36_d4a4_4254_8a1f_1f7f571d4233	Aktm-PDK1	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{79} = {} & \text{mwe2aded94\_f2b5\_4513\_8670\_71a86abf7968} \\ & \cdot [\text{mw62bf5275\_ce02\_4e86\_b3b6\_3f87a335e1de}] \\ & \cdot [\text{mw6e01967b\_3e2a\_433d\_bec6\_9f9cf3ba243c}] \\ & - \text{mw8d6eacb6\_7184\_4564\_8cde\_53e93add2146} \\ & \cdot [\text{mw6353aa36\_d4a4\_4254\_8a1f\_1f7f571d4233}] \end{aligned} \tag{159}$$

Table 320: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe2aded94-_f2b5-_4513_8670-_71a86abf7968	k91		10.0		☑
mw8d6eacb6-_7184-_4564_8cde-_53e93add2146	kr91		1.0		☑

6.80 Reaction mw98da32e0_b061_40c5_9d32_40744134f3fa

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

Name r92

Reaction equation

$$\text{mw6353aa36\_d4a4\_4254\_8a1f\_1f7f571d4233} \xrightarrow{\text{mw6353aa36\_d4a4\_4254\_8a1f\_1f7f571d4233}} \text{mwc1935afc\_56b1\_4a8} \tag{160}$$

Reactant

Table 321: Properties of each reactant.

Id	Name	SBO
mw6353aa36_d4a4_4254_8a1f_1f7f571d4233	Aktm-PDK1	

Modifier

Table 322: Properties of each modifier.

Id	Name	SBO
mw6353aa36_d4a4_4254_8a1f_1f7f571d4233	Aktm-PDK1	

Product

Table 323: Properties of each product.

Id	Name	SBO
mwc1935afc_56b1_4a87_923c_ae6d82455d80	pAktm-PDK1	

Kinetic Law

Derived unit contains undeclared units

$$v_{80} = \text{mw3c3648cb\_6d56\_4d9d\_be47\_129483778fd6} \cdot [\text{mw6353aa36\_d4a4\_4254\_8a1f\_1f7f571d4233}] \tag{161}$$

Table 324: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw3c3648cb-_6d56-_4d9d_be47-_129483778fd6	k92		10.0		☑

6.81 Reaction mw31369230_1f14_45bd_be02_a44a275c6e31

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

Name r93

Reaction equation

$$\text{mwc1935afc\_56b1\_4a87\_923c\_ae6d82455d80} \rightleftharpoons \text{mwc1935afc\_56b1\_4a87\_923c\_ae6d82455d80, mw3d81860d\_d786\_4} \tag{162}$$

Reactant

Table 325: Properties of each reactant.

Id	Name	SBO
mwc1935afc_56b1_4a87_923c_ae6d82455d80	pAktm-PDK1	

Modifiers

Table 326: Properties of each modifier.

Id	Name	SBO
mwc1935afc_56b1_4a87_923c_ae6d82455d80	pAktm-PDK1	
mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d	pAktm	
mw6e01967b_3e2a_433d_bec6_9f9cf3ba243c	PDK1	

Products

Table 327: Properties of each product.

Id	Name	SBO
mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d	pAktm	
mw6e01967b_3e2a_433d_bec6_9f9cf3ba243c	PDK1	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{81} = {} & \text{mw98405e53\_330b\_4a64\_a700\_a62bb3f21426} \\ & \cdot [\text{mwc1935afc\_56b1\_4a87\_923c\_ae6d82455d80}] \\ & - \text{mw11f8de84\_6639\_486d\_bf17\_8f7021f54b66} \\ & \cdot [\text{mw3d81860d\_d786\_4fcc\_b8bb\_64f1a2d7739d}] \\ & \cdot [\text{mw6e01967b\_3e2a\_433d\_bec6\_9f9cf3ba243c}] \end{aligned} \tag{163}$$

Table 328: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw98405e53-_330b-_4a64_a700-_a62bb3f21426	k93		0.100		☑

Id	Name	SBO	Value	Unit	Constant
mw11f8de84-_6639-_486d_bf17-_8f7021f54b66	kr93		0.005		☑

6.82 Reaction mw12311a84_3f8d_40c6_8b14_961a8a58d1b6

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

Name r94

Reaction equation

$$\text{mw3d81860d\_d786\_4fcc\_b8bb\_64f1a2d7739d} \xrightleftharpoons{\text{mw3d81860d\_d786\_4fcc\_b8bb\_64f1a2d7739d, mw16796ffe\_4764\_4a}} \tag{164}$$

Reactant

Table 329: Properties of each reactant.

Id	Name	SBO
mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d	pAktm	

Modifiers

Table 330: Properties of each modifier.

Id	Name	SBO
mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d	pAktm	
mw16796ffe_4764_4a9f_942e_149f42c1cd28	pAkt	
mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	PIP3	

Products

Table 331: Properties of each product.

Id	Name	SBO
mw16796ffe_4764_4a9f_942e_149f42c1cd28	pAkt	
mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	PIP3	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{82} = {} & \text{mw65e1222f\_39ad\_4a29\_ae76\_04b7d591af38} \\ & \cdot [\text{mw3d81860d\_d786\_4fcc\_b8bb\_64f1a2d7739d}] \\ & - \text{mw11e520e6\_b1f1\_4802\_af71\_92a2bd9cb644} \\ & \cdot [\text{mw16796ffe\_4764\_4a9f\_942e\_149f42c1cd28}] \\ & \cdot [\text{mwd7f41594\_8377\_4e2e\_9528\_45d5a82ffdb4}] \end{aligned} \tag{165}$$

Table 332: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw65e1222f-_39ad-_4a29_ae76-_04b7d591af38	k94		1.000		☑
mw11e520e6-_b1f1-_4802_af71-_92a2bd9cb644	kr94		0.001		☑

6.83 Reaction mwf3d393e9_ae09_4eab_a39a_ed0eef0f54bc

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

Name r95

Reaction equation

$$\text{mwa6e82fc9\_a0ce\_461c\_93c8\_17f3c807c1a1} \xrightarrow{\text{mwa6e82fc9\_a0ce\_461c\_93c8\_17f3c807c1a1}} \text{mw236a3250\_4c96\_4f6e} \tag{166}$$

Reactant

Table 333: Properties of each reactant.

Id	Name	SBO
mwa6e82fc9_a0ce_461c_93c8_17f3c807c1a1	pAkt-Takt	

Modifier

Table 334: Properties of each modifier.

Id	Name	SBO
mwa6e82fc9_a0ce_461c_93c8_17f3c807c1a1	pAkt-Takt	

Product

Table 335: Properties of each product.

Id	Name	SBO
mw236a3250_4c96_4f6e_b94c_ab3d12852801	Akt-Takt	

Kinetic Law

Derived unit contains undeclared units

$$v_{83} = \text{mw6a4e035b\_11a7\_4155\_9a78\_cfba13631cb1} \cdot [\text{mwa6e82fc9\_a0ce\_461c\_93c8\_17f3c807c1a1}] \quad (167)$$

Table 336: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw6a4e035b-_11a7-_4155_9a78-_cfba13631cb1	k95		0.05		☑

6.84 Reaction mw2698f402_d00b_451e_8b22_93a322fe9a92

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

Name r96

Reaction equation

$$\text{mw236a3250\_4c96\_4f6e\_b94c\_ab3d12852801} \rightleftharpoons \text{mw236a3250\_4c96\_4f6e\_b94c\_ab3d12852801, mwcef73e0e\_d195\_4} \quad (168)$$

Reactant

Table 337: Properties of each reactant.

Id	Name	SBO
mw236a3250_4c96_4f6e_b94c_ab3d12852801	Akt-Takt	

Modifiers

Table 338: Properties of each modifier.

Id	Name	SBO
mw236a3250_4c96_4f6e_b94c_ab3d12852801	Akt-Takt	
mwcef73e0e_d195_4077_ae71_723664ee1602	Akt	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Products

Table 339: Properties of each product.

Id	Name	SBO
mwcef73e0e_d195_4077_ae71_723664ee1602	Akt	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{84} = {} & \text{mw6eebbe41\_cf28\_46e8\_930c\_26f50e08d602} \\ & \cdot [\text{mw236a3250\_4c96\_4f6e\_b94c\_ab3d12852801}] \\ & - \text{mw751c2663\_d807\_482f\_991b\_c8032cb6d996} \\ & \cdot [\text{mwcef73e0e\_d195\_4077\_ae71\_723664ee1602}] \\ & \cdot [\text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812}] \end{aligned} \tag{169}$$

Table 340: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw6eebbe41-_cf28-_46e8_930c-_26f50e08d602	k96		0.001		☑

Id	Name	SBO	Value	Unit	Constant
mw751c2663-_d807-_482f_991b-_c8032cb6d996	kr96		0.001		☑

6.85 Reaction mw028e8b3e_b531_4466_9c3a_e3fcf7fc9be9

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

Name r97

Reaction equation

$$\text{mw16796ffe\_4764\_4a9f\_942e\_149f42c1cd28} + \text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812} \underset{(170)}{\overset{\text{mw16796ffe\_4764\_4a}}{\rightleftharpoons}}$$

Reactants

Table 341: Properties of each reactant.

Id	Name	SBO
mw16796ffe_4764_4a9f_942e_149f42c1cd28	pAkt	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Modifiers

Table 342: Properties of each modifier.

Id	Name	SBO
mw16796ffe_4764_4a9f_942e_149f42c1cd28	pAkt	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	
mwa6e82fc9_a0ce_461c_93c8_17f3c807c1a1	pAkt-Takt	

Product

Table 343: Properties of each product.

Id	Name	SBO
mwa6e82fc9_a0ce_461c_93c8_17f3c807c1a1	pAkt-Takt	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{85} = {} & \text{mwd2d0b340\_bbdb\_40bd\_9eac\_992a2a402b94} \\ & \cdot [\text{mw16796ffe\_4764\_4a9f\_942e\_149f42c1cd28}] \\ & \cdot [\text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812}] \\ & - \text{mwb1b46773\_a218\_4f99\_a000\_a98fbc1275d7} \\ & \cdot [\text{mwa6e82fc9\_a0ce\_461c\_93c8\_17f3c807c1a1}] \end{aligned} \tag{171}$$

Table 344: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwd2d0b340-_bbdb-_40bd_9eac-_992a2a402b94	k97		10.0		☑
mwb1b46773-_a218-_4f99_a000-_a98fbc1275d7	kr97		1.0		☑

6.86 Reaction mwc5e0c166_6a3a_4913_9ed1_dafe97bdb371

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

Name r98

Reaction equation

$$\text{mw3d81860d\_d786\_4fcc\_b8bb\_64f1a2d7739d} + \text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812} \rightleftharpoons \text{mw3d81860d\_d786} \tag{172}$$

Reactants

Table 345: Properties of each reactant.

Id	Name	SBO
mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d	pAktm	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Modifiers

Table 346: Properties of each modifier.

Id	Name	SBO
mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d	pAktm	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	
mw1a0cb97a_b657_430b_963c_92217f643081	pAktm-Takt	

Product

Table 347: Properties of each product.

Id	Name	SBO
mw1a0cb97a_b657_430b_963c_92217f643081	pAktm-Takt	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{86} = {} & \text{mw193f2553\_1ab3\_4b07\_9b4b\_201ee9e08c96} \\ & \cdot [\text{mw3d81860d\_d786\_4fcc\_b8bb\_64f1a2d7739d}] \\ & \cdot [\text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812}] \\ & - \text{mwb7292ff5\_dd13\_41aa\_b9b8\_2c0c75d35fb1} \\ & \cdot [\text{mw1a0cb97a\_b657\_430b\_963c\_92217f643081}] \end{aligned} \tag{173}$$

Table 348: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw193f2553-_1ab3-_4b07_9b4b-_201ee9e08c96	k98		10.0		☑
mwb7292ff5-_dd13-_41aa_b9b8-_2c0c75d35fb1	kr98		1.0		☑

6.87 Reaction mw94b3bae0_4da9_4358_a5ac_a46a5cbf621b

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

Name r99

Reaction equation

$$\text{mw1a0cb97a\_b657\_430b\_963c\_92217f643081} \xrightarrow{\text{mw1a0cb97a\_b657\_430b\_963c\_92217f643081}} \text{mw9b937ca3\_0d82\_4} \tag{174}$$

Reactant

Table 349: Properties of each reactant.

Id	Name	SBO
mw1a0cb97a_b657_430b_963c_92217f643081	pAktm-Takt	

Modifier

Table 350: Properties of each modifier.

Id	Name	SBO
mw1a0cb97a_b657_430b_963c_92217f643081	pAktm-Takt	

Product

Table 351: Properties of each product.

Id	Name	SBO
mw9b937ca3_0d82_46d5_8f5a_0f9701002797	Aktm-Takt	

Kinetic Law

Derived unit contains undeclared units

$$v_{87} = \text{mwf4069175\_b898\_4633\_ac1e\_20f44431c36a} \cdot [\text{mw1a0cb97a\_b657\_430b\_963c\_92217f643081}] \tag{175}$$

Table 352: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwf4069175-_b898-_4633_ac1e-_20f44431c36a	k99		0.05		☑

6.88 Reaction mw362ca1b3_224a_42fb_a14b_6ff467748a5e

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

Name r100

Reaction equation

mw9b937ca3_0d82_46d5_8f5a_0f9701002797 $\rightleftharpoons$ mw9b937ca3_0d82_46d5_8f5a_0f9701002797, mw62bf5275_ce02_4e

(176)

Reactant

Table 353: Properties of each reactant.

Id	Name	SBO
mw9b937ca3_0d82_46d5_8f5a_0f9701002797	Aktm-Takt	

Modifiers

Table 354: Properties of each modifier.

Id	Name	SBO
mw9b937ca3_0d82_46d5_8f5a_0f9701002797	Aktm-Takt	
mw62bf5275_ce02_4e86_b3b6_3f87a335e1de	Aktm	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Products

Table 355: Properties of each product.

Id	Name	SBO
mw62bf5275_ce02_4e86_b3b6_3f87a335e1de	Aktm	

Id	Name	SBO
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{88} = {} & \text{mw6d852e8c\_c64a\_4926\_80c4\_781a9c04b20e} \\ & \cdot [\text{mw9b937ca3\_0d82\_46d5\_8f5a\_0f9701002797}] \\ & - \text{mw4d614bfc\_3e20\_450e\_8890\_6326afd0a0d7} \\ & \cdot [\text{mw62bf5275\_ce02\_4e86\_b3b6\_3f87a335e1de}] \\ & \cdot [\text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812}] \end{aligned} \tag{177}$$

Table 356: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw6d852e8c-_c64a-_4926_80c4-_781a9c04b20e	k100		0.001		☑
mw4d614bfc-_3e20-_450e_8890-_6326afd0a0d7	kr100		0.001		☑

6.89 Reaction mw3994e898_7232_4b70_9c58_b3476e8655f5

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

Name r101

Reaction equation

$$\text{mwc1935afc\_56b1\_4a87\_923c\_ae6d82455d80} + \text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812} \rightleftharpoons \text{mwc1935afc\_56b1\_} \tag{178}$$

Reactants

Table 357: Properties of each reactant.

Id	Name	SBO
mwc1935afc_56b1_4a87_923c_ae6d82455d80	pAktm-PDK1	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Modifiers

Table 358: Properties of each modifier.

Id	Name	SBO
mwc1935afc_56b1_4a87_923c_ae6d82455d80	pAktm-PDK1	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	
mw57a44eb0_ace7_4294_905a_219e87d3c281	pAktm-PDK1-Takt	

Product

Table 359: Properties of each product.

Id	Name	SBO
mw57a44eb0_ace7_4294_905a_219e87d3c281	pAktm-PDK1-Takt	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{89} = {} & \text{mw3676a900\_b098\_4a74\_a511\_e15984ca0cd2} \\ & \cdot [\text{mwc1935afc\_56b1\_4a87\_923c\_ae6d82455d80}] \\ & \cdot [\text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812}] \\ & - \text{mwf68a0726\_94b5\_4be1\_933f\_1ac48053601d} \\ & \cdot [\text{mw57a44eb0\_ace7\_4294\_905a\_219e87d3c281}] \end{aligned} \tag{179}$$

Table 360: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw3676a900-_b098-_4a74_a511-_e15984ca0cd2	k101		10.0		☑

Id	Name	SBO	Value	Unit	Constant
mwf68a0726-_94b5-_4be1_933f-_1ac48053601d	kr101		1.0		☑

6.90 Reaction mw75acd2d1_3fdf_4c3f_8d99_6d62f825d5e2

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

Name r102

Reaction equation

$$\text{mw57a44eb0\_ace7\_4294\_905a\_219e87d3c281} \xrightarrow[(180)]{\text{mw57a44eb0\_ace7\_4294\_905a\_219e87d3c281}} \text{mwd746a5d5\_5e65\_4a}$$

Reactant

Table 361: Properties of each reactant.

Id	Name	SBO
mw57a44eb0_ace7_4294_905a_219e87d3c281	pAktm-PDK1-Takt	

Modifier

Table 362: Properties of each modifier.

Id	Name	SBO
mw57a44eb0_ace7_4294_905a_219e87d3c281	pAktm-PDK1-Takt	

Product

Table 363: Properties of each product.

Id	Name	SBO
mwd746a5d5_5e65_4a4c_9f84_0e4a3cb7d2fc	Aktm-PDK1-Takt	

Kinetic Law

Derived unit contains undeclared units

$$v_{90} = \text{mwb4f0353c\_d140\_44cc\_ab75\_566fcc2909c5} \cdot [\text{mw57a44eb0\_ace7\_4294\_905a\_219e87d3c281}] \tag{181}$$

Table 364: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwb4f0353c-_d140-_44cc_ab75-_566fcc2909c5	k102		0.05		☑

6.91 Reaction mw4a334f7d_9bce_4690_b623_a427ed66a174

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

Name r103

Reaction equation

$$\text{mwd746a5d5\_5e65\_4a4c\_9f84\_0e4a3cb7d2fc} \rightleftharpoons \text{mwd746a5d5\_5e65\_4a4c\_9f84\_0e4a3cb7d2fc, mw6353aa36\_d4a4\_42} \tag{182}$$

Reactant

Table 365: Properties of each reactant.

Id	Name	SBO
mwd746a5d5_5e65_4a4c_9f84_0e4a3cb7d2fc	Aktm-PDK1-Takt	

Modifiers

Table 366: Properties of each modifier.

Id	Name	SBO
mwd746a5d5_5e65_4a4c_9f84_0e4a3cb7d2fc	Aktm-PDK1-Takt	
mw6353aa36_d4a4_4254_8a1f_1f7f571d4233	Aktm-PDK1	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Products

Table 367: Properties of each product.

Id	Name	SBO
mw6353aa36_d4a4_4254_8a1f_1f7f571d4233	Aktm-PDK1	
mw11a8b702_b8ac_4513_b4aa_063e51089812	Takt	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{91} = {} & \text{mw6165953d\_ce44\_4b21\_a18a\_c401c04993f1} \\ & \cdot [\text{mwd746a5d5\_5e65\_4a4c\_9f84\_0e4a3cb7d2fc}] \\ & - \text{mw99a30aef\_212a\_4577\_bcfd\_8c5764057cca} \\ & \cdot [\text{mw6353aa36\_d4a4\_4254\_8a1f\_1f7f571d4233}] \\ & \cdot [\text{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812}] \end{aligned} \tag{183}$$

Table 368: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw6165953d-_ce44-_4b21_a18a-_c401c04993f1	k103		0.001		☑
mw99a30aef-_212a-_4577_bcfd-_8c5764057cca	kr103		0.001		☑

6.92 Reaction mw950485f2_4463_4309_a4e4_cc81d16ffb7f

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

Name r104

Reaction equation

$$\text{mwaff92910\_ed3d\_40b9\_a29c\_e4866167e828} \xrightarrow{\text{mwa6994523\_5d45\_4000\_af0c\_3e94073bf183, mwa6994523\_5d45\_40}} \tag{184}$$

Reactant

Table 369: Properties of each reactant.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	

Modifiers

Table 370: Properties of each modifier.

Id	Name	SBO
mwa6994523_5d45_4000_af0c_3e94073bf183	pAkt_total	
mwa6994523_5d45_4000_af0c_3e94073bf183	pAkt_total	
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	

Product

Table 371: Properties of each product.

Id	Name	SBO
mwdf92bdc0_f426_45b0_9ad0_876521f41312	pRaf1active	

Kinetic Law

Derived unit contains undeclared units

$$v_{92} = \frac{\text{mw94b0216f\_3353\_4b36\_b9b7\_fd34a0510b08} \cdot [\text{mwa6994523\_5d45\_4000\_af0c\_3e94073bf183}] \cdot [\text{mwaff92910\_ed}}{\text{mw2034bbe7\_27cc\_410c\_9870\_1f8a5986dfa5} + [\text{mwaff92910\_ed3d\_40b9\_a29c\_e486616}} \quad (185)$$

Table 372: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw94b0216f_3353_4b36_b9b7_fd34a0510b08	Kon		0.1		☑
mw2034bbe7_27cc_410c_9870_1f8a5986dfa5	Km		0.2		☑

6.93 Reaction mw62f71309_e066_47d2_9b99_01f78a51c218

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

Name r105

Reaction equation

$$\text{mwdf92bdc0\_f426\_45b0\_9ad0\_876521f41312} \xrightarrow{\text{mwdf92bdc0\_f426\_45b0\_9ad0\_876521f41312}} \text{mwaff92910\_ed3d\_40b} \tag{186}$$

Reactant

Table 373: Properties of each reactant.

Id	Name	SBO
mwdf92bdc0_f426_45b0_9ad0_876521f41312	pRaf1active	

Modifier

Table 374: Properties of each modifier.

Id	Name	SBO
mwdf92bdc0_f426_45b0_9ad0_876521f41312	pRaf1active	

Product

Table 375: Properties of each product.

Id	Name	SBO
mwaff92910_ed3d_40b9_a29c_e4866167e828	Raf1active	

Kinetic Law

Derived unit contains undeclared units

$$v_{93} = \text{mw0cea56f3\_1cdb\_410e\_a5a4\_f3635ba5c94b} \cdot [\text{mwdf92bdc0\_f426\_45b0\_9ad0\_876521f41312}] \tag{187}$$

Table 376: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw0cea56f3-_1cdb-_410e_a5a4-_f3635ba5c94b	k105		1.0		☑

6.94 Reaction mwe8647e48_f4a9_40f4_9b32_f89ded572e01

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

Name r106

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mw13abe2a6\_9905\_40e5\_8c23\_3fc8834b572a} \underset{(188)}{\rightleftharpoons} \text{mwbfcf6773\_1915\_4}$$

Reactants

Table 377: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw13abe2a6_9905_40e5_8c23_3fc8834b572a	STAT3c	

Modifiers

Table 378: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mw13abe2a6_9905_40e5_8c23_3fc8834b572a	STAT3c	
mw2fd710a6_7fe2_4484_bca6_59c187bade8b	pEGF-EGFR2-STAT3c	

Product

Table 379: Properties of each product.

Id	Name	SBO
mw2fd710a6_7fe2_4484_bca6_59c187bade8b	pEGF-EGFR2-STAT3c	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{94} = {} & \text{mw50a0e884\_a88c\_46a7\_b985\_788868bc1029} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mw13abe2a6\_9905\_40e5\_8c23\_3fc8834b572a}] \\ & - \text{mw2c88e0e2\_e9c3\_4e4c\_bb2e\_b0cd1f6420f4} \\ & \cdot [\text{mw2fd710a6\_7fe2\_4484\_bca6\_59c187bade8b}] \end{aligned} \tag{189}$$

Table 380: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw50a0e884-_a88c-_46a7_b985-_788868bc1029	k106		5.50		☑
mw2c88e0e2-_e9c3-_4e4c_bb2e-_b0cd1f6420f4	k106r		11.74		☑

6.95 Reaction mw65b9e026_bc6c_4c94_8b37_8b9acdf50c8a

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

Name r107

Reaction equation

$$\text{mw2fd710a6\_7fe2\_4484\_bca6\_59c187bade8b} \xrightarrow{\text{mw2fd710a6\_7fe2\_4484\_bca6\_59c187bade8b}} \text{mwbfcf6773\_1915\_432} \tag{190}$$

Reactant

Table 381: Properties of each reactant.

Id	Name	SBO
mw2fd710a6_7fe2_4484_bca6_59c187bade8b	pEGF-EGFR2-STAT3c	

Modifier

Table 382: Properties of each modifier.

Id	Name	SBO
mw2fd710a6_7fe2_4484_bca6_59c187bade8b	pEGF-EGFR2-STAT3c	

Products

Table 383: Properties of each product.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	

Kinetic Law

Derived unit contains undeclared units

$$v_{95} = \text{mw95e2190d\_8e39\_419b\_ad26\_7cc141f7b87b} \cdot [\text{mw2fd710a6\_7fe2\_4484\_bca6\_59c187bade8b}] \tag{191}$$

Table 384: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw95e2190d-_8e39-_419b_ad26-_7cc141f7b87b	K107		0.4		☑

6.96 Reaction mw1c9d29fa_bff4_4d2f_9d5f_f1791e4882a3

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

Name r108

Reaction equation

$$\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} + \text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af} \rightleftharpoons \text{mwbfcf6773\_1915\_43} \tag{192}$$

Reactants

Table 385: Properties of each reactant.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	

Modifiers

Table 386: Properties of each modifier.

Id	Name	SBO
mwbfcf6773_1915_432c_b1d2_1f246094cc74	pEGF-EGFR2	
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	
mw341082a0_8017_4cc7_9d00_b1211a196072	pEGF-EGFR2-pSTAT3c	

Product

Table 387: Properties of each product.

Id	Name	SBO
mw341082a0_8017_4cc7_9d00_b1211a196072	pEGF-EGFR2-pSTAT3c	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{96} = {} & \text{mw76d68ace\_272d\_4178\_bba2\_74dfdf260c70} \\ & \cdot [\text{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74}] \\ & \cdot [\text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af}] \\ & - \text{mwe37b936f\_7781\_4a01\_b59b\_96bd7db0c49e} \\ & \cdot [\text{mw341082a0\_8017\_4cc7\_9d00\_b1211a196072}] \end{aligned} \tag{193}$$

Table 388: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw76d68ace-_272d-_4178_bba2-_74dfdf260c70	K108		5.0		☑
mwe37b936f-_7781-_4a01_b59b-_96bd7db0c49e	K108r		0.5		☑

6.97 Reaction mwad97bd5a_3dae_49d9_990b_2e6574740618

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

Name r109

Reaction equation

$$\text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af} + \text{mwcea1f1c1\_2f85\_4af1\_98ea\_ef14cf580c09} \underset{(194)}{\rightleftharpoons} \text{mwb6a9aa2c\_62e7\_410f}$$

Reactants

Table 389: Properties of each reactant.

Id	Name	SBO
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	
mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	PP1	

Modifiers

Table 390: Properties of each modifier.

Id	Name	SBO
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	
mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	PP1	
mwdc34472c_a6f9_4002_951d_e0e8da64eb42	pSTAT3c-PP1	

Product

Table 391: Properties of each product.

Id	Name	SBO
mwdc34472c_a6f9_4002_951d_e0e8da64eb42	pSTAT3c-PP1	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{97} = {} & \text{mwb6701ead\_d3f2\_4eb3\_8b08\_341cea49a4b2} \\ & \cdot [\text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af}] \\ & \cdot [\text{mwcea1f1c1\_2f85\_4af1\_98ea\_ef14cf580c09}] \\ & - \text{mwa5016035\_3f9f\_44fc\_9f69\_1d7a0155eb36} \\ & \cdot [\text{mwdc34472c\_a6f9\_4002\_951d\_e0e8da64eb42}] \end{aligned} \tag{195}$$

Table 392: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwb6701ead_d3f2_4eb3_8b08_341cea49a4b2	k109		1.0		☑
mwa5016035_3f9f_44fc_9f69_1d7a0155eb36	k109r		0.2		☑

6.98 Reaction mwe9988e4a_083c_4f8e_b154_3e599c9307b0

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

Name r110

Reaction equation

$$\text{mwdc34472c\_a6f9\_4002\_951d\_e0e8da64eb42} \xrightarrow{\text{mwdc34472c\_a6f9\_4002\_951d\_e0e8da64eb42}} \text{mw13abe2a6\_9905\_40} \tag{196}$$

Reactant

Table 393: Properties of each reactant.

Id	Name	SBO
mwdc34472c_a6f9_4002_951d_e0e8da64eb42	pSTAT3c-PP1	

Modifier

Table 394: Properties of each modifier.

Id	Name	SBO
mwdc34472c_a6f9_4002_951d_e0e8da64eb42	pSTAT3c-PP1	

Products

Table 395: Properties of each product.

Id	Name	SBO
mw13abe2a6_9905_40e5_8c23_3fc8834b572a	STAT3c	
mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	PP1	

Kinetic Law

Derived unit contains undeclared units

$$v_{98} = \text{mw26164d03\_adda\_4a21\_b5ac\_59e1d5a8d8ab} \cdot [\text{mwdc34472c\_a6f9\_4002\_951d\_e0e8da64eb42}] \tag{197}$$

Table 396: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw26164d03_adda_4a21_b5ac_59e1d5a8d8ab	k110		0.003		☑

6.99 Reaction mwf8bacf1a_6c1a_49b6_b344_2d3bd404a735

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

Name r111

Reaction equation

$$\text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af} + \text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af} \rightleftharpoons \text{mwb6a9aa2c\_62e7\_410} \tag{198}$$

Reactants

Table 397: Properties of each reactant.

Id	Name	SBO
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	

Modifiers

Table 398: Properties of each modifier.

Id	Name	SBO
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	
mw4f575c55_7dff_45d7_94ad_cda9621d5b63	pSTAT3c-pSTAT3c	

Product

Table 399: Properties of each product.

Id	Name	SBO
mw4f575c55_7dff_45d7_94ad_cda9621d5b63	pSTAT3c-pSTAT3c	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{99} = {} & \text{mw9fe16c2b\_7271\_4e4f\_b6de\_c149721a3198} \\ & \cdot [\text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af}] \\ & \cdot [\text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af}] \\ & - \text{mw74ea5b55\_ead0\_4b6f\_8da0\_fd1dcf7e231d} \\ & \cdot [\text{mw4f575c55\_7dff\_45d7\_94ad\_cda9621d5b63}] \end{aligned} \tag{199}$$

Table 400: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw9fe16c2b-_7271-_4e4f_b6de-_c149721a3198	k111		20.0		☑
mw74ea5b55-_ead0-_4b6f_8da0-_fd1dcf7e231d	k111r		0.1		☑

6.100 Reaction mwc9b945cf_3a14_4bd9_b253_7064498c75e2

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

Name r112

Reaction equation

$$\text{mw4f575c55\_7dff\_45d7\_94ad\_cda9621d5b63} + \text{mwcea1f1c1\_2f85\_4af1\_98ea\_ef14cf580c09} \underset{(200)}{\overset{\text{mw4f575c55\_7dff\_45d}}{\rightleftharpoons}}$$

Reactants

Table 401: Properties of each reactant.

Id	Name	SBO
mw4f575c55_7dff_45d7_94ad_cda9621d5b63	pSTAT3c-pSTAT3c	
mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	PP1	

Modifiers

Table 402: Properties of each modifier.

Id	Name	SBO
mw4f575c55_7dff_45d7_94ad_cda9621d5b63	pSTAT3c-pSTAT3c	
mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	PP1	
mw472d5cb9_120e_4f60_bbae_1ae2552837dd	pSTAT3c-pSTAT3c-PP1	

Product

Table 403: Properties of each product.

Id	Name	SBO
mw472d5cb9_120e_4f60_bbae_1ae2552837dd	pSTAT3c-pSTAT3c-PP1	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{100} = {} & \text{mw8cbe6595\_6f16\_4704\_afe2\_0dd043a175fa} \\ & \cdot [\text{mw4f575c55\_7dff\_45d7\_94ad\_cda9621d5b63}] \\ & \cdot [\text{mwcea1f1c1\_2f85\_4af1\_98ea\_ef14cf580c09}] \\ & - \text{mw21d22acd\_ddd4\_4794\_9700\_52201984f75b} \\ & \cdot [\text{mw472d5cb9\_120e\_4f60\_bbae\_1ae2552837dd}] \end{aligned} \tag{201}$$

Table 404: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw8cbe6595_6f16_4704_afe2_0dd043a175fa	k112		1.0		☑
mw21d22acd_ddd4_4794_9700_52201984f75b	k112r		0.2		☑

6.101 Reaction mw75c6078f_fb76_4ca9_9fdd_e221e3ba57ad

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

Name r113

Reaction equation

$$\text{mw472d5cb9\_120e\_4f60\_bbae\_1ae2552837dd} \xrightarrow{\text{mw472d5cb9\_120e\_4f60\_bbae\_1ae2552837dd}} \text{mwd2c465fb\_eea7\_49} \tag{202}$$

Reactant

Table 405: Properties of each reactant.

Id	Name	SBO
mw472d5cb9_120e_4f60_bbae_1ae2552837dd	pSTAT3c-pSTAT3c-PP1	

Modifier

Table 406: Properties of each modifier.

Id	Name	SBO
mw472d5cb9_120e_4f60_bbae_1ae2552837dd	pSTAT3c-pSTAT3c-PP1	

Products

Table 407: Properties of each product.

Id	Name	SBO
mwd2c465fb_eea7_499a_8ea4_f318a64cb9ee	STAT3c-pSTAT3c	
mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09	PP1	

Kinetic Law

Derived unit contains undeclared units

$$v_{101} = \text{mw81384973\_14a0\_4498\_ab21\_f70666d46d7f} \cdot [\text{mw472d5cb9\_120e\_4f60\_bbae\_1ae2552837dd}] \tag{203}$$

Table 408: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw81384973-_14a0-_4498_ab21-_f70666d46d7f	k113		0.003		☑

6.102 Reaction mw177fa7b0_f0be_4c3e_8b47_2ac4e13159a2

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

Name r114

Reaction equation

$$\text{mw13abe2a6\_9905\_40e5\_8c23\_3fc8834b572a} + \text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af} \xrightleftharpoons{\text{mw13abe2a6\_9905\_40} \quad (204)$$

Reactants

Table 409: Properties of each reactant.

Id	Name	SBO
mw13abe2a6_9905_40e5_8c23_3fc8834b572a	STAT3c	
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	

Modifiers

Table 410: Properties of each modifier.

Id	Name	SBO
mw13abe2a6_9905_40e5_8c23_3fc8834b572a	STAT3c	
mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af	pSTAT3c	
mwd2c465fb_eea7_499a_8ea4_f318a64cb9ee	STAT3c-pSTAT3c	

Product

Table 411: Properties of each product.

Id	Name	SBO
mwd2c465fb_eea7_499a_8ea4_f318a64cb9ee	STAT3c-pSTAT3c	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{102} = {} & \text{mw9f1a7f64\_0b37\_42df\_9dd5\_e1a44efdcbba} \\ & \cdot [\text{mw13abe2a6\_9905\_40e5\_8c23\_3fc8834b572a}] \\ & \cdot [\text{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af}] \\ & - \text{mw366e6f17\_4081\_4cdc\_9fa5\_0aeb354d692c} \\ & \cdot [\text{mwd2c465fb\_eea7\_499a\_8ea4\_f318a64cb9ee}] \end{aligned} \quad (205)$$

Table 412: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw9f1a7f64-_0b37-_42df_9dd5-_e1a44efdcbba	k114		$2 \cdot 10^{-4}$		☑
mw366e6f17-_4081-_4cdc_9fa5-_0aeb354d692c	k114r		0.200		☑

6.103 Reaction mwec4127b5_6bcf_4128_aff4_a6b3c470f690

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

Name r115

Reaction equation

mw4f575c55_7dff_45d7_94ad_cda9621d5b63 $\xrightarrow{\text{mw4f575c55\_7dff\_45d7\_94ad\_cda9621d5b63}}$ mw4110f531_7513_478
(206)

Reactant

Table 413: Properties of each reactant.

Id	Name	SBO
mw4f575c55_7dff_45d7_94ad_cda9621d5b63	pSTAT3c-pSTAT3c	

Modifier

Table 414: Properties of each modifier.

Id	Name	SBO
mw4f575c55_7dff_45d7_94ad_cda9621d5b63	pSTAT3c-pSTAT3c	

Product

Table 415: Properties of each product.

Id	Name	SBO
mw4110f531_7513_4786_8896_7c9d969ff558	pSTAT3n-pSTAT3n	

Kinetic Law

Derived unit contains undeclared units

$$v_{103} = \text{mw1df2caba\_8e41\_4fe5\_a1b5\_7777eb98ed1c} \cdot [\text{mw4f575c55\_7dff\_45d7\_94ad\_cda9621d5b63}] \tag{207}$$

Table 416: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw1df2caba-_8e41-_4fe5_a1b5-_7777eb98ed1c	k115		0.005		☑

6.104 Reaction mw5c806b00_59a1_491e_99a1_2c932b2d5d7a

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

Name r116

Reaction equation

$$\text{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664} + \text{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664} \rightleftharpoons \text{mwe3fd7f65\_b0d1\_44} \tag{208}$$

Reactants

Table 417: Properties of each reactant.

Id	Name	SBO
mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664	pSTAT3n	
mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664	pSTAT3n	

Modifiers

Table 418: Properties of each modifier.

Id	Name	SBO
mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664	pSTAT3n	
mw4110f531_7513_4786_8896_7c9d969ff558	pSTAT3n-pSTAT3n	

Product

Table 419: Properties of each product.

Id	Name	SBO
mw4110f531_7513_4786_8896_7c9d969ff558	pSTAT3n-pSTAT3n	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{104} = {} & \text{mw5a798f7a\_b4eb\_4a27\_b413\_4ff3956b90e9} \\ & \cdot [\text{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664}] \\ & \cdot [\text{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664}] \\ & - \text{mw54178365\_18c1\_47e0\_94ee\_6b96582c52ef} \\ & \cdot [\text{mw4110f531\_7513\_4786\_8896\_7c9d969ff558}] \end{aligned} \tag{209}$$

Table 420: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw5a798f7a-_b4eb-_4a27_b413-_4ff3956b90e9	k116		20.0		☑
mw54178365-_18c1-_47e0_94ee-_6b96582c52ef	k116r		0.1		☑

6.105 Reaction mw26fdabae_323b_4a78_b134_4c2eb70ea6a7

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

Name r117

Reaction equation

$$\mathrm{mw4110f531\_7513\_4786\_8896\_7c9d969ff558} + \mathrm{mw0e1be972\_fded\_4bff\_a93d\_091ec942485f} \rightleftharpoons \mathrm{mw4110f531\_7513\_4} \tag{210}$$

Reactants

Table 421: Properties of each reactant.

Id	Name	SBO
mw4110f531_7513_4786_8896_7c9d969ff558	pSTAT3n-pSTAT3n	
mw0e1be972_fded_4bff_a93d_091ec942485f	PP2	

Modifiers

Table 422: Properties of each modifier.

Id	Name	SBO
mw4110f531_7513_4786_8896_7c9d969ff558	pSTAT3n-pSTAT3n	
mw0e1be972_fded_4bff_a93d_091ec942485f	PP2	
mw0facb8f2_95cf_4ddf_a959_b24ba64f320b	pSTAT3n-pSTAT3n-PP2	

Product

Table 423: Properties of each product.

Id	Name	SBO
mw0facb8f2_95cf_4ddf_a959_b24ba64f320b	pSTAT3n-pSTAT3n-PP2	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{105} = {} & \mathrm{mw1ff4e75e\_fce5\_4a7a\_907b\_05df4981f80b} \\ & \cdot [\mathrm{mw4110f531\_7513\_4786\_8896\_7c9d969ff558}] \\ & \cdot [\mathrm{mw0e1be972\_fded\_4bff\_a93d\_091ec942485f}] \\ & - \mathrm{mw8b269d52\_eda9\_4dd1\_8616\_ebcf29c971fa} \\ & \cdot [\mathrm{mw0facb8f2\_95cf\_4ddf\_a959\_b24ba64f320b}] \end{aligned} \tag{211}$$

Table 424: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw1ff4e75e-_fce5-_4a7a_907b-_05df4981f80b	k117		1.0		☑
mw8b269d52-_eda9-_4dd1_8616-_ebcf29c971fa	k117r		0.2		☑

6.106 Reaction mw3b0c171c_6d60_41ca_8193_83cd5e6c188c

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

Name r118

Reaction equation

mw0facb8f2_95cf_4ddf_a959_b24ba64f320b $\xrightarrow{\text{mw0facb8f2\_95cf\_4ddf\_a959\_b24ba64f320b}}$ mw9686f53e_d343_45fd_ (212)

Reactant

Table 425: Properties of each reactant.

Id	Name	SBO
mw0facb8f2_95cf_4ddf_a959_b24ba64f320b	pSTAT3n-pSTAT3n-PP2	

Modifier

Table 426: Properties of each modifier.

Id	Name	SBO
mw0facb8f2_95cf_4ddf_a959_b24ba64f320b	pSTAT3n-pSTAT3n-PP2	

Products

Table 427: Properties of each product.

Id	Name	SBO
mw9686f53e_d343_45fd_b441_9c992219546a	STAT3n-pSTAT3n	
mw0e1be972_fded_4bff_a93d_091ec942485f	PP2	

Kinetic Law

Derived unit contains undeclared units

$$v_{106} = \text{mw90b25c4b\_ad1a\_4ee5\_ae20\_c60451484516} \cdot [\text{mw0facb8f2\_95cf\_4ddf\_a959\_b24ba64f320b}] \tag{213}$$

Table 428: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw90b25c4b-_ad1a-_4ee5_ae20-_c60451484516	k118		0.005		☑

6.107 Reaction mwc38a99c8_74cf_49f2_a16b_f6610ca1a0a7

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

Name r119

Reaction equation

$$\text{mw960bddeb\_e567\_46dd\_b2f3\_ed5e6a5c7972} + \text{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664} \rightleftharpoons \text{mw960bddeb\_e567\_4} \tag{214}$$

Reactants

Table 429: Properties of each reactant.

Id	Name	SBO
mw960bddeb_e567_46dd_b2f3_ed5e6a5c7972	STAT3n	
mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664	pSTAT3n	

Modifiers

Table 430: Properties of each modifier.

Id	Name	SBO
mw960bddeb_e567_46dd_b2f3_ed5e6a5c7972	STAT3n	
mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664	pSTAT3n	
mw9686f53e_d343_45fd_b441_9c992219546a	STAT3n-pSTAT3n	

Product

Table 431: Properties of each product.

Id	Name	SBO
mw9686f53e_d343_45fd_b441_9c992219546a	STAT3n-pSTAT3n	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{107} = {} & \text{mwa0806e7a\_a90d\_4187\_9c37\_6d9ea569a447} \\ & \cdot [\text{mw960bddeb\_e567\_46dd\_b2f3\_ed5e6a5c7972}] \\ & \cdot [\text{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664}] \\ & - \text{mw95cb9071\_56e2\_447d\_b7c7\_59ac96baa623} \\ & \cdot [\text{mw9686f53e\_d343\_45fd\_b441\_9c992219546a}] \end{aligned} \tag{215}$$

Table 432: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwa0806e7a-_a90d-_4187_9c37-_6d9ea569a447	k119		$2 \cdot 10^{-4}$		☑
mw95cb9071-_56e2-_447d_b7c7-_59ac96baa623	k119r		0.200		☑

6.108 Reaction mw45d92b79_0656_4795_87d0_7a465949ca43

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

Name r120

Reaction equation

$$\text{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664} + \text{mw0e1be972\_fded\_4bff\_a93d\_091ec942485f} \underset{(216)}{\rightleftharpoons} \text{mwe3fd7f65\_b0d1\_44d}$$

Reactants

Table 433: Properties of each reactant.

Id	Name	SBO
mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664	pSTAT3n	
mw0e1be972_fded_4bff_a93d_091ec942485f	PP2	

Modifiers

Table 434: Properties of each modifier.

Id	Name	SBO
mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664	pSTAT3n	
mw0e1be972_fded_4bff_a93d_091ec942485f	PP2	
mw8c85ff7f_6368_4b11_a2ed_ce83481b55e6	pSTAT3n-PP2	

Product

Table 435: Properties of each product.

Id	Name	SBO
mw8c85ff7f_6368_4b11_a2ed_ce83481b55e6	pSTAT3n-PP2	

Kinetic Law

Derived unit contains undeclared units

$$
\begin{aligned}
v_{108} = {} & \text{mwba545ecf\_c7d4\_4a6c\_8c47\_9e91f052d5a9} \\
& \cdot [\text{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664}] \\
& \cdot [\text{mw0e1be972\_fded\_4bff\_a93d\_091ec942485f}] \\
& - \text{mw01c5ceef\_57a1\_4baa\_b2cd\_fd39e9588a10} \\
& \cdot [\text{mw8c85ff7f\_6368\_4b11\_a2ed\_ce83481b55e6}]
\end{aligned}
\tag{217}
$$

Table 436: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwba545ecf-_c7d4-_4a6c_8c47-_9e91f052d5a9	k120		1.0		☑
mw01c5ceef-_57a1-_4baa_b2cd-_fd39e9588a10	k120r		0.2		☑

6.109 Reaction mwb71945c2_03a8_4fad_a995_e1caeee98525

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

Name r121

Reaction equation

$$
\text{mw8c85ff7f\_6368\_4b11\_a2ed\_ce83481b55e6} \xrightarrow{\text{mw8c85ff7f\_6368\_4b11\_a2ed\_ce83481b55e6}} \text{mw960bddeb\_e567\_46d}
\tag{218}
$$

Reactant

Table 437: Properties of each reactant.

Id	Name	SBO
mw8c85ff7f_6368_4b11_a2ed_ce83481b55e6	pSTAT3n-PP2	

Modifier

Table 438: Properties of each modifier.

Id	Name	SBO
mw8c85ff7f_6368_4b11_a2ed_ce83481b55e6	pSTAT3n-PP2	

Products

Table 439: Properties of each product.

Id	Name	SBO
mw960bddeb_e567_46dd_b2f3_ed5e6a5c7972	STAT3n	
mw0e1be972_fded_4bff_a93d_091ec942485f	PP2	

Kinetic Law

Derived unit contains undeclared units

$$v_{109} = \text{mw7aba6db3\_c7ec\_4192\_bb5e\_0ac4b466c1a5} \cdot [\text{mw8c85ff7f\_6368\_4b11\_a2ed\_ce83481b55e6}] \tag{219}$$

Table 440: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw7aba6db3-_c7ec-_4192_bb5e-_0ac4b466c1a5	k121		0.005		☑

6.110 Reaction mwd189238c_e8f9_40be_b4ea_18a42bba1b4f

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

Name r122

Reaction equation

$$\text{mw960bddeb\_e567\_46dd\_b2f3\_ed5e6a5c7972} \xrightarrow{\text{mw960bddeb\_e567\_46dd\_b2f3\_ed5e6a5c7972}} \text{mw13abe2a6\_9905\_40} \tag{220}$$

Reactant

Table 441: Properties of each reactant.

Id	Name	SBO
mw960bddeb_e567_46dd_b2f3_ed5e6a5c7972	STAT3n	

Modifier

Table 442: Properties of each modifier.

Id	Name	SBO
mw960bddeb_e567_46dd_b2f3_ed5e6a5c7972	STAT3n	

Product

Table 443: Properties of each product.

Id	Name	SBO
mw13abe2a6_9905_40e5_8c23_3fc8834b572a	STAT3c	

Kinetic Law

Derived unit contains undeclared units

$$v_{110} = \text{mw31eb851a\_c381\_419d\_b694\_f158b7f5cfb6} \cdot [\text{mw960bddeb\_e567\_46dd\_b2f3\_ed5e6a5c7972}] \tag{221}$$

Table 444: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw31eb851a-_c381-_419d_b694-_f158b7f5cfb6	k122		0.05		☑

6.111 Reaction mw52a97dfa_4e16_4604_98ec_72a9b405ad2d

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

Name r123

Reaction equation

$$\text{mwd7f41594\_8377\_4e2e\_9528\_45d5a82ffdb4} \xrightarrow{\text{mwd7f41594\_8377\_4e2e\_9528\_45d5a82ffdb4}} \text{mwb561d9f3\_a9ed\_4bd} \tag{222}$$

Reactant

Table 445: Properties of each reactant.

Id	Name	SBO
mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	PIP3	

Modifier

Table 446: Properties of each modifier.

Id	Name	SBO
mwd7f41594_8377_4e2e_9528_45d5a82ffdb4	PIP3	

Product

Table 447: Properties of each product.

Id	Name	SBO
mwb561d9f3_a9ed_4bdb_8d40_87be5cc3237a	PIP2	

Kinetic Law

Derived unit contains undeclared units

$$v_{111} = \text{mwa5567196\_f821\_479b\_973b\_f0967a3eb761} \cdot [\text{mwd7f41594\_8377\_4e2e\_9528\_45d5a82ffdb4}] \tag{223}$$

Table 448: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwa5567196-_f821-_479b_973b-_f0967a3eb761	k123		17.0		☑

6.112 Reaction mw0fbf73ac_8427_4a8c_9b0e_c51676638be4

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

Name r124

Reaction equation

$$\text{mw2fd710a6\_7fe2\_4484\_bca6\_59c187bade8b} + \text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b} \underset{(224)}{\rightleftharpoons} \text{mw2fd710a6\_7fe2\_44}$$

Reactants

Table 449: Properties of each reactant.

Id	Name	SBO
mw2fd710a6_7fe2_4484_bca6_59c187bade8b	pEGF-EGFR2-STAT3c	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	

Modifiers

Table 450: Properties of each modifier.

Id	Name	SBO
mw2fd710a6_7fe2_4484_bca6_59c187bade8b	pEGF-EGFR2-STAT3c	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mw9da19d39_6d91_41d0_b101_f7748391705a	pEGF-EGFR2-STAT3c-cbl	

Product

Table 451: Properties of each product.

Id	Name	SBO
mw9da19d39_6d91_41d0_b101_f7748391705a	pEGF-EGFR2-STAT3c-cbl	

Kinetic Law

Derived unit contains undeclared units

$$
\begin{aligned}
v_{112} = {} & \text{mw693f22fe\_7af9\_4af8\_a026\_faace261163b} \\
& \cdot [\text{mw2fd710a6\_7fe2\_4484\_bca6\_59c187bade8b}] \\
& \cdot [\text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b}] \\
& - \text{mw4e34dd0b\_2ef1\_4805\_ba4a\_2c859bdcb5e2} \\
& \cdot [\text{mw9da19d39\_6d91\_41d0\_b101\_f7748391705a}]
\end{aligned}
\tag{225}
$$

Table 452: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw693f22fe-_7af9-_4af8_a026-_faace261163b	k124		0.200		☑
mw4e34dd0b-_2ef1-_4805_ba4a-_2c859bdcb5e2	kr124		0.005		☑

6.113 Reaction mw2146635b_dc09_44be_97f3_940933f38925

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

Name r125

Reaction equation

$$
\text{mw9da19d39\_6d91\_41d0\_b101\_f7748391705a} + \text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57} \rightleftharpoons \text{mw9da19d39\_6d91}
\tag{226}
$$

Reactants

Table 453: Properties of each reactant.

Id	Name	SBO
mw9da19d39_6d91_41d0_b101_f7748391705a	pEGF-EGFR2-STAT3c-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Modifiers

Table 454: Properties of each modifier.

Id	Name	SBO
mw9da19d39_6d91_41d0_b101_f7748391705a	pEGF-EGFR2-STAT3c-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	
mw741407c8_029b_44ed_9799_02eb9d90ec9a	pEGF-EGFR2-STAT3c-cbl-EPn	

Product

Table 455: Properties of each product.

Id	Name	SBO
mw741407c8_029b_44ed_9799_02eb9d90ec9a	pEGF-EGFR2-STAT3c-cbl-EPn	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{113} = {} & \text{mw6ccc709f\_7522\_4378\_9862\_9182b326736f} \\ & \cdot [\text{mw9da19d39\_6d91\_41d0\_b101\_f7748391705a}] \\ & \cdot [\text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57}] \\ & - \text{mw52cfcb04\_5483\_4dca\_a06f\_d1132baa2665} \\ & \cdot [\text{mw741407c8\_029b\_44ed\_9799\_02eb9d90ec9a}] \end{aligned} \tag{227}$$

Table 456: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw6ccc709f-_7522-_4378_9862-_9182b326736f	k125		2.00		☑
mw52cfcb04-_5483-_4dca_a06f-_d1132baa2665	kr125		0.05		☑

6.114 Reaction mw3eaece15_c282_46e1_baad_ab56a5664619

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

Name r126

Reaction equation

$$\text{mw741407c8\_029b\_44ed\_9799\_02eb9d90ec9a} \xrightarrow{\text{mw741407c8\_029b\_44ed\_9799\_02eb9d90ec9a}} \text{mw13abe2a6\_9905\_4(} \tag{228}$$

Reactant

Table 457: Properties of each reactant.

Id	Name	SBO
mw741407c8_029b_44ed_9799_02eb9d90ec9a	pEGF-EGFR2-STAT3c-cbl-EPn	

Modifier

Table 458: Properties of each modifier.

Id	Name	SBO
mw741407c8_029b_44ed_9799_02eb9d90ec9a	pEGF-EGFR2-STAT3c-cbl-EPn	

Products

Table 459: Properties of each product.

Id	Name	SBO
mw13abe2a6_9905_40e5_8c23_3fc8834b572a	STAT3c	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Kinetic Law

Derived unit contains undeclared units

$$v_{114} = \text{mw74529c03\_0e18\_4c1b\_8704\_a9816a9ea3d0} \cdot [\text{mw741407c8\_029b\_44ed\_9799\_02eb9d90ec9a}] \tag{229}$$

Table 460: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mw74529c03-_0e18-_4c1b_8704-_a9816a9ea3d0	k126		$5 \cdot 10^{-4}$		☑

6.115 Reaction mw3cf723f4_c4fe_46e2_87e1_bab6a91d4583

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

Name r127

Reaction equation

$$\text{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5} + \text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b} \underset{(230)}{\rightleftharpoons} \text{mw0dc4e5eb\_4366\_47}$$

Reactants

Table 461: Properties of each reactant.

Id	Name	SBO
mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5	pEGF-EGFR2-PI3K	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	

Modifiers

Table 462: Properties of each modifier.

Id	Name	SBO
mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5	pEGF-EGFR2-PI3K	
mw19122f7d_f92e_4dc0_922f_6b681db65b0b	cbl	
mwbedcc124_dbf3_41ab_989e_6b0900d7590a	pEGF-EGFR2-PI3K-cbl	

Product

Table 463: Properties of each product.

Id	Name	SBO
mwbedcc124_dbf3_41ab_989e_6b0900d7590a	pEGF-EGFR2-PI3K-cbl	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{115} = {} & \text{mwe5304629\_3bf5\_4912\_b431\_190349f23010} \\ & \cdot [\text{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5}] \\ & \cdot [\text{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b}] \\ & - \text{mw53f2f6aa\_0608\_4b23\_bfe6\_f27b10b55fe5} \\ & \cdot [\text{mwbedcc124\_dbf3\_41ab\_989e\_6b0900d7590a}] \end{aligned} \tag{231}$$

Table 464: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe5304629_3bf5_4912_b431_190349f23010	k127		0.200		☑
mw53f2f6aa_0608_4b23_bfe6_f27b10b55fe5	kr127		0.005		☑

6.116 Reaction mwd46c52b2_27ca_4fe0_9c59_04167b0db92a

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

Name r128

Reaction equation

$$\text{mwbedcc124\_dbf3\_41ab\_989e\_6b0900d7590a} + \text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57} \rightleftharpoons \text{mwbedcc124\_dbf3\_4} \tag{232}$$

Reactants

Table 465: Properties of each reactant.

Id	Name	SBO
mwbedcc124_dbf3_41ab_989e_6b0900d7590a	pEGF-EGFR2-PI3K-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Modifiers

Table 466: Properties of each modifier.

Id	Name	SBO
mwbedcc124_dbf3_41ab_989e_6b0900d7590a	pEGF-EGFR2-PI3K-cbl	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	
mw71d03aab_fcb6_4f78_a788_48f183d0b931	pEGF-EGFR2-PI3K-cbl-EPn	

Product

Table 467: Properties of each product.

Id	Name	SBO
mw71d03aab_fcb6_4f78_a788_48f183d0b931	pEGF-EGFR2-PI3K-cbl-EPn	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{116} = {} & \text{mwe6f05aa0\_13b8\_4d76\_aaf0\_680cc578302a} \\ & \cdot [\text{mwbedcc124\_dbf3\_41ab\_989e\_6b0900d7590a}] \\ & \cdot [\text{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57}] \\ & - \text{mw7018cad1\_4fc0\_4bbe\_aa44\_7fa2e01b424c} \\ & \cdot [\text{mw71d03aab\_fcb6\_4f78\_a788\_48f183d0b931}] \end{aligned} \tag{233}$$

Table 468: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwe6f05aa0-_13b8-_4d76_aaf0-_680cc578302a	k128		2.00		☑

Id	Name	SBO	Value	Unit	Constant
mw7018cad1-_4fc0-_4bbe_aa44-_7fa2e01b424c	kr128		0.05		☑

6.117 Reaction mw8453434c_1b7f_429e_8902_ca15dc0ba9e1

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

Name r129

Reaction equation

$$\text{mw71d03aab\_fcb6\_4f78\_a788\_48f183d0b931} \xrightarrow{\text{mw71d03aab\_fcb6\_4f78\_a788\_48f183d0b931}} \text{mw2ba1db9a\_4483\_44f}$$

(234)

Reactant

Table 469: Properties of each reactant.

Id	Name	SBO
mw71d03aab_fcb6_4f78_a788_48f183d0b931	pEGF-EGFR2-PI3K-cbl-EPn	

Modifier

Table 470: Properties of each modifier.

Id	Name	SBO
mw71d03aab_fcb6_4f78_a788_48f183d0b931	pEGF-EGFR2-PI3K-cbl-EPn	

Products

Table 471: Properties of each product.

Id	Name	SBO
mw2ba1db9a_4483_44fa_a3a2_b4a5ea66898c	PI3K	
mwb2366216_0b3c_4f28_8303_fec92c68dd57	EPn	

Kinetic Law

Derived unit contains undeclared units

$$v_{117} = \text{mwce8da2e5\_1143\_4235\_805b\_f7725e8473ec} \cdot [\text{mw71d03aab\_fcb6\_4f78\_a788\_48f183d0b931}] \tag{235}$$

Table 472: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
mwce8da2e5-_1143-_4235_805b-_f7725e8473ec	k129		$5 \cdot 10^{-4}$		☑

7 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.

7.1 Species mwe2fff28d_182c_4a1c_9882_f17774c0958a

Name EGF

Initial amount 0.0081967 mol

This species takes part in two reactions (as a reactant in mwa67e40c1_693d_4214_adc8_b2f2b71cef12 and as a modifier in mwa67e40c1_693d_4214_adc8_b2f2b71cef12).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{mwe2fff28d\_182c\_4a1c\_9882\_f17774c0958a} = -v_1 \tag{236}$$

7.2 Species mw93907b2d_53db_4080_9e3f_3eb304441ab9

Name EGFR

Initial amount 1 mol

This species takes part in three reactions (as a reactant in mwa67e40c1_693d_4214_adc8_b2f2b71cef12 and as a product in mw47dee769_daa0_4af4_978a_5ab17e504c2f and as a modifier in mwa67e40c1_693d_4214_adc8_b2f2b71cef12).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw93907b2d\_53db\_4080\_9e3f\_3eb304441ab9} = v_{60} - v_1 \tag{237}$$

7.3 Species mw7eacabf9_d68c_491a_aba2_ec0809a8ecc8

Name EGF-EGFR

Initial amount 0 mol

This species takes part in five reactions (as a reactant in mw877cd1e3_b48b_42e8_ab23_682dd893fd9d, mw877cd1e3_b48b_42e8_ab23_682dd893fd9d and as a product in mwa67e40c1_693d_4214_adc8_b2f2b71cef12 and as a modifier in mwa67e40c1_693d_4214_adc8_b2f2b71cef12, mw877cd1e3_b48b_42e8_ab23_682dd893fd9d).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw7eacabf9\_d68c\_491a\_aba2\_ec0809a8ecc8} = v_1 - v_2 - v_2 \tag{238}$$

7.4 Species mwa8f2e7b2_0927_4ab4_a817_dddc43bb4fa3

Name EGF-EGFR2

Initial amount 0 mol

This species takes part in eight reactions (as a reactant in mw413c6d45_ab23_4d3e_87b3_a8ed4629b923 and as a product in mw877cd1e3_b48b_42e8_ab23_682dd893fd9d, mw9544e67b_b6d0_4941_b7e0_ecd4f400a335, mw7bb43f0a_c87e_41ff_8a43_cdf45c8f05e6, mw4f89bf6c_8691_41a6_a1ac_13e6aa8c4b93, mw642ac312_2ee7_4e66_8f3e_e2da2bb6412a and as a modifier in mw877cd1e3_b48b_42e8_ab23_682dd893fd9d, mw413c6d45_ab23_4d3e_87b3_a8ed4629b923).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa8f2e7b2\_0927\_4ab4\_a817\_dddc43bb4fa3} = v_2 + v_7 + v_{14} + v_{20} + v_{34} - v_3 \tag{239}$$

7.5 Species mwbfcf6773_1915_432c_b1d2_1f246094cc74

Name pEGF-EGFR2

Initial amount 0 mol

This species takes part in 26 reactions (as a reactant in mwf61e086d_0345_4d4c_b91d_0b105e543d04, mw91f49311_efdc_47c6_b8b8_a619e042d644, mw0e459167_515b_4c4d_8b67_bf0a5b3e9d61, mwd0d92dd4_81b7_4385_bfd7_5de82e193ecd, mw0a51fbf0_409b_4b45_b4ac_0220af4c4e3c, mw85e457d1_73f8_4236_bb61_a128d300003f, mw77484632_4e33_468a_9937_24e9bfd0e17d,

mwe8647e48_f4a9_40f4_9b32_f89ded572e01, mw1c9d29fa_bff4_4d2f_9d5f_f1791e4882a3 and as a product in mw413c6d45_ab23_4d3e_87b3_a8ed4629b923, mw486c5261_3d03_4589-_a1e9_978b62ad2dfe, mwcf9f1b1d_e19a_4fa8_85ba_8f17e2cec730, mw4685274a_2b55_429f-_927f_3fd863592af6, mwd3a36af9_3ccc_4bb1_9867_3b9823ba4ac8, mw65b9e026_bc6c_4c94-_8b37_8b9acdf50c8a and as a modifier in mwf61e086d_0345_4d4c_b91d_0b105e543d04, mw91f49311_efdc_47c6_b8b8_a619e042d644, mw486c5261_3d03_4589_a1e9_978b62ad2dfe, mw0e459167_515b_4c4d_8b67_bf0a5b3e9d61, mwd0d92dd4_81b7_4385_bfd7_5de82e193ecd, mw0a51fbf0_409b_4b45_b4ac_0220af4c4e3c, mw85e457d1_73f8_4236_bb61_a128d300003f, mw77484632_4e33_468a_9937_24e9bfd0e17d, mwd3a36af9_3ccc_4bb1_9867_3b9823ba4ac8, mwe8647e48_f4a9_40f4_9b32_f89ded572e01, mw1c9d29fa_bff4_4d2f_9d5f_f1791e4882a3).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwbfcf6773\_1915\_432c\_b1d2\_1f246094cc74} \\ = v_3 + v_8 + v_{56} + v_{58} + v_{72} + v_{95} - v_4 - v_5 \\ - v_{18} - v_{22} - v_{30} - v_{67} - v_{70} - v_{94} - v_{96}\end{aligned} \tag{240}$$

7.6 Species mw19122f7d_f92e_4dc0_922f_6b681db65b0b

Name cbl

Initial amount 0.8 mol

This species takes part in 14 reactions (as a reactant in mwbd8a133e_1b70_44e8_bef8_78b14141166b, mw6bee0112_92dc_4169_9109_2633772b3aa4, mw85e457d1_73f8_4236_bb61_a128d300003f, mw0fbf73ac_8427_4a8c_9b0e_c51676638be4, mw3cf723f4_c4fe_46e2_87e1_bab6a91d4583 and as a product in mw363a5271_1f51_4d5e_87a7_42ea25cb5657, mweb93165f_cf03_48f1-_b035_59d79e324314, mwc9b3b248_3290_452a_9b7c_8fdada3e6687, mw3eaece15_c282_46e1-_baad_ab56a5664619 and as a modifier in mwbd8a133e_1b70_44e8_bef8_78b14141166b, mw6bee0112_92dc_4169_9109_2633772b3aa4, mw85e457d1_73f8_4236_bb61_a128d300003f, mw0fbf73ac_8427_4a8c_9b0e_c51676638be4, mw3cf723f4_c4fe_46e2_87e1_bab6a91d4583).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw19122f7d\_f92e\_4dc0\_922f\_6b681db65b0b} \\ = v_{63} + v_{66} + v_{69} + v_{114} - v_{61} - v_{64} - v_{67} - v_{112} - v_{115}\end{aligned} \tag{241}$$

7.7 Species mw3c2e1b43_29ca_491a_93e9_c723a993d6fb

Name Shc

Initial amount 1 mol

This species takes part in four reactions (as a reactant in mwf61e086d_0345_4d4c_b91d_0b105e543d04 and as a product in mweda6a945_fb5d_4d99_9958_11b2b2840308, mwd4bf58ea_70c9_43ea-_a831_1fcde130ba28 and as a modifier in mwf61e086d_0345_4d4c_b91d_0b105e543d04).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw3c2e1b43\_29ca\_491a\_93e9\_c723a993d6fb} = v_{10} + v_{11} - v_4 \tag{242}$$

7.8 Species mw5198d3c2_879c_4f0d_b4f8_cd40efe0b1cf

Name pEGF-EGFR2-Shc

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw974c39f5_b82e_44b3_abec_7a724f46c526 and as a product in mwf61e086d_0345_4d4c_b91d_0b105e543d04 and as a modifier in mwf61e086d_0345_4d4c_b91d_0b105e543d04, mw974c39f5_b82e_44b3_abec_7a724f46c526).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw5198d3c2\_879c\_4f0d\_b4f8\_cd40efe0b1cf} = v_4 - v_6 \tag{243}$$

7.9 Species mwe57c3282_5935_405c_8c0b_7fadb7a5de17

Name SHP

Initial amount 0.2 mol

This species takes part in 15 reactions (as a reactant in mw91f49311_efdc_47c6_b8b8_a619e042d644, mw2cf8a809_63d8_4717_91fc_070516e6f3db, mw03998474_934b_4e4a_8c0c_ca359e402ac2, mwc52e0f9b_1e0c_46ca_8d18_f05ef4a080cb, mwc5aae1f8_52e4_4bcd_b044_3768f90b7b19 and as a product in mw9544e67b_b6d0_4941_b7e0_ecd4f400a335, mweda6a945_fb5d_4d99_9958_11b2b2840308, mw7bb43f0a_c87e_41ff_8a43_cdf45c8f05e6, mw4f89bf6c_8691_41a6_a1ac_13e6aa8c4b93, mw642ac312_2ee7_4e66_8f3e_e2da2bb6412a and as a modifier in mw91f49311_efdc_47c6_b8b8_a619e042d644, mw2cf8a809_63d8_4717_91fc_070516e6f3db, mw03998474_934b_4e4a_8c0c_ca359e402ac2, mwc52e0f9b_1e0c_46ca_8d18_f05ef4a080cb, mwc5aae1f8_52e4_4bcd_b044_3768f90b7b19).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}&\mathrm{mwe57c3282\_5935\_405c\_8c0b\_7fadb7a5de17}\\ &= v_7 + v_{10} + v_{14} + v_{20} + v_{34} - v_5 - v_9 - v_{13} - v_{19} - v_{33}\end{aligned} \tag{244}$$

7.10 Species mw954e8fcb_ac0a_459d_8878_f19080208a17

Name pEGF-EGFR2-SHP2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw9544e67b_b6d0_4941_b7e0_ecd4f400a335 and as a product in mw91f49311_efdc_47c6_b8b8_a619e042d644 and as a modifier in mw91f49311_efdc_47c6_b8b8_a619e042d644, mw9544e67b_b6d0_4941_b7e0_ecd4f400a335).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw954e8fcb\_ac0a\_459d\_8878\_f19080208a17} = v_5 - v_7 \tag{245}$$

7.11 Species mwa98802cb_c977_4fe0_9e67_5000904c2c36

Name pEGF-EGFR2-pShc

Initial amount 0 mol

This species takes part in seven reactions (as a reactant in mw486c5261_3d03_4589_a1e9_978b62ad2dfe, mw4817365e_a33b_451f_bee1_de748377ede2, mw23a29b42_9813_4e46_b8ae_966e3215e6dc and as a product in mw974c39f5_b82e_44b3_abec_7a724f46c526 and as a modifier in mw486c5261_3d03_4589_a1e9_978b62ad2dfe, mw4817365e_a33b_451f_bee1_de748377ede2, mw23a29b42_9813_4e46_b8ae_966e3215e6dc).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa98802cb\_c977\_4fe0\_9e67\_5000904c2c36} = v_6 - v_8 - v_{12} - v_{17} \tag{246}$$

7.12 Species mwa0349407_8187_48fc_9e94_5698ccc4e06d

Name pShc

Initial amount 0 mol

This species takes part in nine reactions (as a reactant in mw2cf8a809_63d8_4717_91fc_070516e6f3db, mwd4bf58ea_70c9_43ea_a831_1fcde130ba28 and as a product in mw486c5261_3d03_4589_a1e9_978b62ad2dfe, mw7bb43f0a_c87e_41ff_8a43_cdf45c8f05e6, mwcf9f1b1d_e19a_4fa8_85ba_8f17e2cec730, mw363a5271_1f51_4d5e_87a7_42ea25cb5657 and as a modifier in mw486c5261_3d03_4589_a1e9_978b62ad2dfe, mw2cf8a809_63d8_4717_91fc_070516e6f3db, mwd4bf58ea_70c9_43ea_a831_1fcde130ba28).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa0349407\_8187\_48fc\_9e94\_5698ccc4e06d} = v_8 + v_{14} + v_{56} + v_{63} - v_9 - v_{11} \tag{247}$$

7.13 Species mwf9999977_6f0e_4e35_9b73_75587f3448e9

Name pShc-SHP2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mweda6a945_fb5d_4d99_9958_11b2b2840308 and as a product in mw2cf8a809_63d8_4717_91fc_070516e6f3db and as a modifier in mw2cf8a809_63d8_4717_91fc_070516e6f3db, mweda6a945_fb5d_4d99_9958_11b2b2840308).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf9999977\_6f0e\_4e35\_9b73\_75587f3448e9} = v_9 - v_{10} \tag{248}$$

7.14 Species mwf430a579_ecbf_48ba_80c2_06e455808f2a

Name Grb2

Initial amount 1 mol

This species takes part in ten reactions (as a reactant in mw4817365e_a33b_451f_bee1_de748377ede2, mwc5f121dc_d27d_4c3d_90f2_67d0adaf144a, mw0e459167_515b_4c4d_8b67_bf0a5b3e9d61 and as a product in mw7bb43f0a_c87e_41ff_8a43_cdf45c8f05e6, mw4f89bf6c_8691_41a6-_a1ac_13e6aa8c4b93, mwcf9f1b1d_e19a_4fa8_85ba_8f17e2cec730, mw4685274a_2b55_429f-_927f_3fd863592af6 and as a modifier in mw4817365e_a33b_451f_bee1_de748377ede2, mwc5f121dc_d27d_4c3d_90f2_67d0adaf144a, mw0e459167_515b_4c4d_8b67_bf0a5b3e9d61).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf430a579\_ecbf\_48ba\_80c2\_06e455808f2a} = v_{14} + v_{20} + v_{56} + v_{58} - v_{12} - v_{16} - v_{18} \tag{249}$$

7.15 Species mw504578d8_96c3_471f_8a7e_8c14e7535d3d

Name pEGF-EGFR2-pShc-Grb2

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mw03998474_934b_4e4a_8c0c_ca359e402ac2, mwd9262331_e35a_4614_943a_89bcf8a492e3 and as a product in mw4817365e_a33b_451f-_bee1_de748377ede2 and as a modifier in mw4817365e_a33b_451f_bee1_de748377ede2, mw03998474_934b_4e4a_8c0c_ca359e402ac2, mwd9262331_e35a_4614_943a_89bcf8a492e3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw504578d8\_96c3\_471f\_8a7e\_8c14e7535d3d} = v_{12} - v_{13} - v_{15} \tag{250}$$

7.16 Species mw45ab688a_6467_4a3e_a779_2118fa84d69e

Name pEGF-EGFR2-pShc-Grb2-SHP2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw7bb43f0a_c87e_41ff_8a43_cdf45c8f05e6 and as a product in mw03998474_934b_4e4a_8c0c_ca359e402ac2 and as a modifier in mw03998474-_934b_4e4a_8c0c_ca359e402ac2, mw7bb43f0a_c87e_41ff_8a43_cdf45c8f05e6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw45ab688a\_6467\_4a3e\_a779\_2118fa84d69e} = v_{13} - v_{14} \tag{251}$$

7.17 Species mw9dcaa655_a755_426e_a3fa_1ad7c3c45575

Name SOS

Initial amount 0.3 mol

This species takes part in seven reactions (as a reactant in mwd9262331_e35a_4614_943a_89bcf8a492e3, mwc5f121dc_d27d_4c3d_90f2_67d0adaf144a, mw35f71989_f89b_4440_b1a4_ebc7b4cc18b2 and as a product in mw8e331e43_16b4_478d_880b_d5a3244540e4 and as a modifier in mwd9262331_e35a_4614_943a_89bcf8a492e3, mwc5f121dc_d27d_4c3d_90f2_67d0adaf144a, mw35f71989_f89b_4440_b1a4_ebc7b4cc18b2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw9dcaa655\_a755\_426e\_a3fa\_1ad7c3c45575} = v_{59} - v_{15} - v_{16} - v_{21} \tag{252}$$

7.18 Species mwfbda4e09_0cbb_49bc_ae69_f88b7a79ed21

Name pEGF-EGFR2-pShc-Grb2-SOS

Initial amount 0 mol

This species takes part in eleven reactions (as a reactant in mwbb77e3d6_6065_4344_9361_e30c03514f4e, mw8dec1159_1925_45d9_af25_3cb709a5017c, mwbd8a133e_1b70_44e8_bef8_78b14141166b and as a product in mwd9262331_e35a_4614_943a_89bcf8a492e3, mw23a29b42_9813_4e46_b8ae_966e3215e6dc, mw0bcfad86_59b9_42ff_bcb7_fbb44845049d and as a modifier in mwd9262331_e35a_4614_943a_89bcf8a492e3, mw23a29b42_9813_4e46_b8ae_966e3215e6dc, mwbb77e3d6_6065_4344_9361_e30c03514f4e, mw8dec1159_1925_45d9_af25_3cb709a5017c, mwbd8a133e_1b70_44e8_bef8_78b14141166b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwfbda4e09\_0cbb\_49bc\_ae69\_f88b7a79ed21} = v_{15} + v_{17} + v_{25} - v_{23} - v_{55} - v_{61} \tag{253}$$

7.19 Species mwb1bc2058_e6d8_4680_9e6c_d27bb366cde0

Name pEGF-EGFR2-pShc-Grb2-SOS-cbl

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw3a87ca5a_845d_4ac4_8806_e343cbbfc630 and as a product in mwbd8a133e_1b70_44e8_bef8_78b14141166b and as a modifier in mwbd8a133e_1b70_44e8_bef8_78b14141166b, mw3a87ca5a_845d_4ac4_8806_e343cbbfc630).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwb1bc2058\_e6d8\_4680\_9e6c\_d27bb366cde0} = v_{61} - v_{62} \tag{254}$$

7.20 Species mw1093b3af_1864_4ba3_a541_6009a9921282

Name Grb2-SOS

Initial amount 0 mol

This species takes part in eight reactions (as a reactant in mw23a29b42_9813_4e46_b8ae-_966e3215e6dc, mwd0d92dd4_81b7_4385_bfd7_5de82e193ecd and as a product in mwc5f121dc-_d27d_4c3d_90f2_67d0adaf144a, mw363a5271_1f51_4d5e_87a7_42ea25cb5657, mweb93165f-_cf03_48f1_b035_59d79e324314 and as a modifier in mwc5f121dc_d27d_4c3d_90f2_67d0adaf144a, mw23a29b42_9813_4e46_b8ae_966e3215e6dc, mwd0d92dd4_81b7_4385_bfd7_5de82e193ecd).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw1093b3af\_1864\_4ba3\_a541\_6009a9921282} = v_{16} + v_{63} + v_{66} - v_{17} - v_{22} \quad (255)$$

7.21 Species mwd9462e5b_a272_4b66_ab66_fde9266b1a43

Name pEGF-EGFR2-Grb2

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mwc52e0f9b_1e0c_46ca_8d18_f05ef4a080cb, mw35f71989_f89b_4440_b1a4_ebc7b4cc18b2 and as a product in mw0e459167_515b_4c4d-_8b67_bf0a5b3e9d61 and as a modifier in mw0e459167_515b_4c4d_8b67_bf0a5b3e9d61, mwc52e0f9b_1e0c_46ca_8d18_f05ef4a080cb, mw35f71989_f89b_4440_b1a4_ebc7b4cc18b2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwd9462e5b\_a272\_4b66\_ab66\_fde9266b1a43} = v_{18} - v_{19} - v_{21} \quad (256)$$

7.22 Species mw925b938a_fe73_4664_ba6f_e72e57780891

Name pEGF-EGFR2-Grb2-SHP2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw4f89bf6c_8691_41a6_a1ac_13e6aa8c4b93 and as a product in mwc52e0f9b_1e0c_46ca_8d18_f05ef4a080cb and as a modifier in mwc52e0f9b-_1e0c_46ca_8d18_f05ef4a080cb, mw4f89bf6c_8691_41a6_a1ac_13e6aa8c4b93).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw925b938a\_fe73\_4664\_ba6f\_e72e57780891} = v_{19} - v_{20} \quad (257)$$

7.23 Species mwf8cc7834_bf4f_4ccd_8235_d0890badf0f6

Name pEGF-EGFR2-Grb2-SOS

Initial amount 0 mol

This species takes part in eleven reactions (as a reactant in mw934c3638_603e_4ff0_a763_68f9405fa01f, mwa5c135b4_77e2_4411_98e1_2000c39d4b30, mw6bee0112_92dc_4169_9109_2633772b3aa4 and as a product in mw35f71989_f89b_4440_b1a4_ebc7b4cc18b2, mwd0d92dd4_81b7_4385_bfd7_5de82e193ecd, mwe9b50ac7_dac3_4eba_b1db_b3fd392d8fb7 and as a modifier in mw35f71989_f89b_4440_b1a4_ebc7b4cc18b2, mwd0d92dd4_81b7_4385_bfd7_5de82e193ecd, mw934c3638_603e_4ff0_a763_68f9405fa01f, mwa5c135b4_77e2_4411_98e1_2000c39d4b30, mw6bee0112_92dc_4169_9109_2633772b3aa4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf8cc7834\_bf4f\_4ccd\_8235\_d0890badf0f6} = v_{21} + v_{22} + v_{26} - v_{27} - v_{57} - v_{64} \tag{258}$$

7.24 Species mw481cd12b_61ba_44e5_93bf_8b88c6c4a4e7

Name pEGF-EGFR2-Grb2-SOS-cbl

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwbac9e6ff_2df1_45eb_b3f4_4cae74c64014 and as a product in mw6bee0112_92dc_4169_9109_2633772b3aa4 and as a modifier in mw6bee0112_92dc_4169_9109_2633772b3aa4, mwbac9e6ff_2df1_45eb_b3f4_4cae74c64014).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw481cd12b\_61ba\_44e5\_93bf\_8b88c6c4a4e7} = v_{64} - v_{65} \tag{259}$$

7.25 Species mw8f5a7b5c_ca4c_4a4c_85b1_e5d640c426bf

Name Ras-GDP

Initial amount 0.3 mol

This species takes part in seven reactions (as a reactant in mwbb77e3d6_6065_4344_9361_e30c03514f4e, mw934c3638_603e_4ff0_a763_68f9405fa01f and as a product in mw921ee820_1dbb_4b5f_866c_87da620d8f89, mwf31259aa_32b7_4104_be70_045297b9a512, mw652570eb_c9d3_499b_b877_61d360b10980 and as a modifier in mwbb77e3d6_6065_4344_9361_e30c03514f4e, mw934c3638_603e_4ff0_a763_68f9405fa01f).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw8f5a7b5c\_ca4c\_4a4c\_85b1\_e5d640c426bf} = v_{24} + v_{29} + v_{32} - v_{23} - v_{27} \tag{260}$$

7.26 Species mwf40d6176_abfc_4a30_886f_83a19fcffc48

Name pEGF-EGFR2-pShc-Grb2-SOS-Ras-GDP

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw0bcfad86_59b9_42ff_bcb7_fbb44845049d and as a product in mwbb77e3d6_6065_4344_9361_e30c03514f4e and as a modifier in mwbb77e3d6_6065_4344_9361_e30c03514f4e, mw0bcfad86_59b9_42ff_bcb7_fbb44845049d).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf40d6176\_abfc\_4a30\_886f\_83a19fcffc48} = v_{23} - v_{25} \tag{261}$$

7.27 Species mwa54a9c38_c98b_45e5_8432_4119fb777e44

Name Ras-GTP

Initial amount 0 mol

This species takes part in eleven reactions (as a reactant in mw921ee820_1dbb_4b5f_866c_87da620d8f89, mw3c617363_649b_4460_a694_36f7a3127a62, mw33baddbd_a23f_45bb_b126_0ba60bbf6c53, mw584a64d0_560a_4297_9882_80cb4eff73f3 and as a product in mw0bcfad86_59b9_42ff_bcb7_fbb44845049d, mwe9b50ac7_dac3_4eba_b1db_b3fd392d8fb7, mw42c97708_4f85_45a8_9141_d0ae529409ca and as a modifier in mw921ee820_1dbb_4b5f_866c_87da620d8f89, mw3c617363_649b_4460_a694_36f7a3127a62, mw33baddbd_a23f_45bb_b126_0ba60bbf6c53, mw584a64d0_560a_4297_9882_80cb4eff73f3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa54a9c38\_c98b\_45e5\_8432\_4119fb777e44} = v_{25} + v_{26} + v_{36} - v_{24} - v_{28} - v_{31} - v_{35} \tag{262}$$

7.28 Species mw28464aad_8013_4a23_ae09_a406954859a6

Name pEGF-EGFR2-Grb2-SOS-Ras-GDP

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwe9b50ac7_dac3_4eba_b1db_b3fd392d8fb7 and as a product in mw934c3638_603e_4ff0_a763_68f9405fa01f and as a modifier in mwe9b50ac7_dac3_4eba_b1db_b3fd392d8fb7, mw934c3638_603e_4ff0_a763_68f9405fa01f).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw28464aad\_8013\_4a23\_ae09\_a406954859a6} = v_{27} - v_{26} \tag{263}$$

7.29 Species mw7cff9a0e_094d_498e_bf7f_7b162c61d63a

Name Ras-GAP

Initial amount 0.1 mol

This species takes part in six reactions (as a reactant in mw3c617363_649b_4460_a694_36f7a3127a62, mw0a51fbf0_409b_4b45_b4ac_0220af4c4e3c and as a product in mwf31259aa_32b7_4104_be70_045297b9a512, mw642ac312_2ee7_4e66_8f3e_e2da2bb6412a and as a modifier in mw3c617363_649b_4460_a694_36f7a3127a62, mw0a51fbf0_409b_4b45_b4ac_0220af4c4e3c).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw7cff9a0e\_094d\_498e\_bf7f\_7b162c61d63a} = v_{29} + v_{34} - v_{28} - v_{30} \tag{264}$$

7.30 Species mwdf82303e_323f_4c51_a858_56a59233cd98

Name Ras-GTP-Ras-GAP

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwf31259aa_32b7_4104_be70_045297b9a512 and as a product in mw3c617363_649b_4460_a694_36f7a3127a62 and as a modifier in mw3c617363_649b_4460_a694_36f7a3127a62, mwf31259aa_32b7_4104_be70_045297b9a512).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwdf82303e\_323f\_4c51\_a858\_56a59233cd98} = v_{28} - v_{29} \tag{265}$$

7.31 Species mwd39388fd_4f85_4d1c_b2a3_37857c595a2d

Name pEGF-EGFR2-Ras-GAP

Initial amount 0 mol

This species takes part in seven reactions (as a reactant in mw33baddbd_a23f_45bb_b126_0ba60bbf6c53, mwc5aae1f8_52e4_4bcd_b044_3768f90b7b19 and as a product in mw0a51fbf0_409b_4b45_b4ac_0220af4c4e3c, mw652570eb_c9d3_499b_b877_61d360b10980 and as a modifier in mw0a51fbf0_409b_4b45_b4ac_0220af4c4e3c, mw33baddbd_a23f_45bb_b126_0ba60bbf6c53, mwc5aae1f8_52e4_4bcd_b044_3768f90b7b19).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwd39388fd\_4f85\_4d1c\_b2a3\_37857c595a2d} = v_{30} + v_{32} - v_{31} - v_{33} \tag{266}$$

7.32 Species mwd7bf31ba_b05c_4c45_bb2f_6a2468a2a507

Name pEGF-EGFR2-Ras-GAP-Ras-GTP

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw652570eb_c9d3_499b_b877_61d360b10980 and as a product in mw33baddbd_a23f_45bb_b126_0ba60bbf6c53 and as a modifier in mw33baddbd_a23f_45bb_b126_0ba60bbf6c53, mw652570eb_c9d3_499b_b877_61d360b10980).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwd7bf31ba\_b05c\_4c45\_bb2f\_6a2468a2a507} = v_{31} - v_{32} \tag{267}$$

7.33 Species mwbf5cb039_b830_4282_aa22_a3dda6272ec1

Name pEGF-EGFR2-Ras-GAP-SHP2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw642ac312_2ee7_4e66_8f3e_e2da2bb6412a and as a product in mwc5aae1f8_52e4_4bcd_b044_3768f90b7b19 and as a modifier in mwc5aae1f8_52e4_4bcd_b044_3768f90b7b19, mw642ac312_2ee7_4e66_8f3e_e2da2bb6412a).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwbf5cb039\_b830\_4282\_aa22\_a3dda6272ec1} = v_{33} - v_{34} \tag{268}$$

7.34 Species mw66ac98c4_7e7b_4071_954d_43eb17584220

Name Raf1

Initial amount 0.5 mol

This species takes part in three reactions (as a reactant in mw584a64d0_560a_4297_9882_80cb4eff73f3 and as a product in mw87711dc1_43d7_40fc_b9e9_a24e2f92419d and as a modifier in mw584a64d0_560a_4297_9882_80cb4eff73f3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw66ac98c4\_7e7b\_4071\_954d\_43eb17584220} = v_{46} - v_{35} \tag{269}$$

7.35 Species mw83de7813_4941_45a6_a320_a551165bf22a

Name Raf1-Ras-GTP

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw42c97708_4f85_45a8_9141_d0ae529409ca and as a product in mw584a64d0_560a_4297_9882_80cb4eff73f3 and as a modifier in mw584a64d0_560a_4297_9882_80cb4eff73f3, mw42c97708_4f85_45a8_9141_d0ae529409ca).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw83de7813\_4941\_45a6\_a320\_a551165bf22a} = v_{35} - v_{36} \tag{270}$$

7.36 Species mwaff92910_ed3d_40b9_a29c_e4866167e828

Name Raf1active

Initial amount 0 mol

This species takes part in twelve reactions (as a reactant in mwaa65a34e_fabf_4d6d_ae0b_f1d08b068f33, mwf5573ddf_ad7f_478a_a784_557a9cddaaf2, mw9c208e18_c70d_4231_af0b_ad17cd0bba2d, mw950485f2_4463_4309_a4e4_cc81d16ffb7f and as a product in mw42c97708_4f85_45a8_9141_d0ae529409ca, mw1bd186cf_4762_480a_b70d_d7a775462398, mwb49058ff_2997_4187_abe7_4dce4ccf6ff4, mw62f71309_e066_47d2_9b99_01f78a51c218 and as a modifier in mwaa65a34e_fabf_4d6d_ae0b_f1d08b068f33, mwf5573ddf_ad7f_478a_a784_557a9cddaaf2, mw9c208e18_c70d_4231_af0b_ad17cd0bba2d, mw950485f2_4463_4309_a4e4_cc81d16ffb7f).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}&\mathrm{mwaff92910\_ed3d\_40b9\_a29c\_e4866167e828}\\ &= v_{36} + v_{38} + v_{40} + v_{93} - v_{37} - v_{39} - v_{45} - v_{92}\end{aligned} \tag{271}$$

7.37 Species mw0834731b_0477_4217_a53b_30cef851191b

Name MEK

Initial amount 0.68 mol

This species takes part in three reactions (as a reactant in mwaa65a34e_fabf_4d6d_ae0b_f1d08b068f33 and as a product in mwa4b69c77_6226_46da_b78c_3e6027d0be41 and as a modifier in mwaa65a34e_fabf_4d6d_ae0b_f1d08b068f33).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw0834731b\_0477\_4217\_a53b\_30cef851191b} = v_{50} - v_{37} \tag{272}$$

7.38 Species mw4628f984_eb87_4922_9760_4975095ce6eb

Name Raf1active-MEK

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw1bd186cf_4762_480a_b70d_d7a775462398 and as a product in mwaa65a34e_fabf_4d6d_ae0b_f1d08b068f33 and as a modifier in mwaa65a34e_fabf_4d6d_ae0b_f1d08b068f33, mw1bd186cf_4762_480a_b70d_d7a775462398).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw4628f984\_eb87\_4922\_9760\_4975095ce6eb} = v_{37} - v_{38} \tag{273}$$

7.39 Species mw9b25f809_18a1_4c14_8f4b_cf18e6d93c28

Name pMEK

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mwf5573ddf_ad7f_478a_a784_557a9cddaaf2, mwbfa79c95_487d_4c6f_b437_9e579451a419 and as a product in mw1bd186cf_4762_480a_b70d_d7a775462398, mw40950d59_1012_4361_8418_73e25758e367 and as a modifier in mwf5573ddf_ad7f_478a_a784_557a9cddaaf2, mwbfa79c95_487d_4c6f_b437_9e579451a419).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw9b25f809\_18a1\_4c14\_8f4b\_cf18e6d93c28} = v_{38} + v_{48} - v_{39} - v_{49} \tag{274}$$

7.40 Species mw12ba4000_d452_420c_be63_96d2848aca32

Name Raf1active-pMEK

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwb49058ff_2997_4187_abe7_4dce4ccf6ff4 and as a product in mwf5573ddf_ad7f_478a_a784_557a9cddaaf2 and as a modifier in mwf5573ddf_ad7f_478a_a784_557a9cddaaf2, mwb49058ff_2997_4187_abe7_4dce4ccf6ff4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw12ba4000\_d452\_420c\_be63\_96d2848aca32} = v_{39} - v_{40} \tag{275}$$

7.41 Species mwf816df4c_4593_4d23_990f_0d7c15ddde5d

Name ppMEK

Initial amount 0 mol

This species takes part in nine reactions (as a reactant in mw8301b154_9463_4516_b4c5_c8f8b68691fe, mw51d9d6b8_f0c0_4763_9d11_9be61b5cf5c9, mw4b445876_bdce_42d0_867b_fd3c74128a6b and as a product in mwb49058ff_2997_4187_abe7_4dce4ccf6ff4, mwf95f743d_6108_49fe_8ffd_bdcc1a9f9a8d, mw6fd24d16_f57d_46c6_82f5_3f00759fa16b and as a modifier in mw8301b154_9463_4516_b4c5_c8f8b68691fe, mw51d9d6b8_f0c0_4763_9d11_9be61b5cf5c9, mw4b445876_bdce_42d0_867b_fd3c74128a6b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf816df4c\_4593\_4d23\_990f\_0d7c15ddde5d} = v_{40} + v_{42} + v_{44} - v_{41} - v_{43} - v_{47} \tag{276}$$

7.42 Species mw7e23b961_186b_47a0_a8b5_5e9957766792

Name ERK

Initial amount 0.8 mol

This species takes part in three reactions (as a reactant in mw8301b154_9463_4516_b4c5_c8f8b68691fe and as a product in mwcc31b497_6c50_446c_bbc2_6c5739507252 and as a modifier in mw8301b154_9463_4516_b4c5_c8f8b68691fe).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw7e23b961\_186b\_47a0\_a8b5\_5e9957766792} = v_{53} - v_{41} \tag{277}$$

7.43 Species mwcedf8ecd_67bd_4b91_aa04_d58782dec2a4

Name ppMEK-ERK

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwf95f743d_6108_49fe_8ffd_bdcc1a9f9a8d and as a product in mw8301b154_9463_4516_b4c5_c8f8b68691fe and as a modifier in mw8301b154_9463_4516_b4c5_c8f8b68691fe, mwf95f743d_6108_49fe_8ffd_bdcc1a9f9a8d).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwcedf8ecd\_67bd\_4b91\_aa04\_d58782dec2a4} = v_{41} - v_{42} \tag{278}$$

7.44 Species mwcc894c94_0ddf_42cc_913e_cdcc4d471d94

Name pERK

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mw51d9d6b8_f0c0_4763_9d11_9be61b5cf5c9, mw1d8c2435_bb85_4352_a25f_82033250579e and as a product in mwf95f743d_6108_49fe_8ffd_bdcc1a9f9a8d, mw61305f93_7b2d_4a2d_8d16_f7be026d8671 and as a modifier in mw51d9d6b8_f0c0_4763_9d11_9be61b5cf5c9, mw1d8c2435_bb85_4352_a25f_82033250579e).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwcc894c94\_0ddf\_42cc\_913e\_cdcc4d471d94} = v_{42} + v_{52} - v_{43} - v_{54} \tag{279}$$

7.45 Species mw6cb74b27_ffef_49bb_8ffb_622d552caa9e

Name ppMEK-pERK

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw6fd24d16_f57d_46c6_82f5_3f00759fa16b and as a product in mw51d9d6b8_f0c0_4763_9d11_9be61b5cf5c9 and as a modifier in mw51d9d6b8_f0c0_4763_9d11_9be61b5cf5c9, mw6fd24d16_f57d_46c6_82f5_3f00759fa16b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw6cb74b27\_ffef\_49bb\_8ffb\_622d552caa9e} = v_{43} - v_{44} \tag{280}$$

7.46 Species mwd784228d_0cb5_468a_ac70_02d8f04b3d9c

Name ppERK

Initial amount 0 mol

This species takes part in nine reactions (as a reactant in mwf8bb22e2_5aa3_4c25_a022_a266b1856a48, mw8dec1159_1925_45d9_af25_3cb709a5017c, mwa5c135b4_77e2_4411_98e1_2000c39d4b30 and as a product in mw6fd24d16_f57d_46c6_82f5_3f00759fa16b, mwcf9f1b1d_e19a_4fa8_85ba_8f17e2cec730, mw4685274a_2b55_429f_927f_3fd863592af6 and as a modifier in mwf8bb22e2_5aa3_4c25_a022_a266b1856a48, mw8dec1159_1925_45d9_af25_3cb709a5017c, mwa5c135b4_77e2_4411_98e1_2000c39d4b30).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwd784228d\_0cb5\_468a\_ac70\_02d8f04b3d9c} = v_{44} + v_{56} + v_{58} - v_{51} - v_{55} - v_{57} \tag{281}$$

7.47 Species mwbaaeb210_4806_4076_9d60_219f4ed945b6

Name Pase

Initial amount 0.5 mol

This species takes part in three reactions (as a reactant in mw9c208e18_c70d_4231_af0b_ad17cd0bba2d and as a product in mw87711dc1_43d7_40fc_b9e9_a24e2f92419d and as a modifier in mw9c208e18_c70d_4231_af0b_ad17cd0bba2d).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwbaaeb210\_4806\_4076\_9d60\_219f4ed945b6} = v_{46} - v_{45} \tag{282}$$

7.48 Species mw19a33ad5_5ba4_46c7_84eb_c1287f02bcd5

Name Raf1active-Pase

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw87711dc1_43d7_40fc_b9e9_a24e2f92419d and as a product in mw9c208e18_c70d_4231_af0b_ad17cd0bba2d and as a modifier in mw9c208e18_c70d_4231_af0b_ad17cd0bba2d, mw87711dc1_43d7_40fc_b9e9_a24e2f92419d).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw19a33ad5\_5ba4\_46c7\_84eb\_c1287f02bcd5} = v_{45} - v_{46} \tag{283}$$

7.49 Species mwf9e2a044_7774_400b_a74e_a111b4a21f30

Name Pase2

Initial amount 0.02 mol

This species takes part in six reactions (as a reactant in mw4b445876_bdce_42d0_867b_fd3c74128a6b, mwbfa79c95_487d_4c6f_b437_9e579451a419 and as a product in mw40950d59_1012_4361_8418_73e25758e367, mwa4b69c77_6226_46da_b78c_3e6027d0be41 and as a modifier in mw4b445876_bdce_42d0_867b_fd3c74128a6b, mwbfa79c95_487d_4c6f_b437_9e579451a419).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwf9e2a044\_7774\_400b\_a74e\_a111b4a21f30} = v_{48} + v_{50} - v_{47} - v_{49} \tag{284}$$

7.50 Species mwcb572fe2_c3ac_40e7_8141_da7d55fce18a

Name ppMEK-Pase2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw40950d59_1012_4361_8418_73e25758e367 and as a product in mw4b445876_bdce_42d0_867b_fd3c74128a6b and as a modifier in mw4b445876_bdce_42d0_867b_fd3c74128a6b, mw40950d59_1012_4361_8418_73e25758e367).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwcb572fe2\_c3ac\_40e7\_8141\_da7d55fce18a} = v_{47} - v_{48} \tag{285}$$

7.51 Species mwa0acc0ac_5fac_4a42_a3be_e36db44994b0

Name pMEK-Pase2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwa4b69c77_6226_46da_b78c_3e6027d0be41 and as a product in mwbfa79c95_487d_4c6f_b437_9e579451a419 and as a modifier in mwbfa79c95_487d_4c6f_b437_9e579451a419, mwa4b69c77_6226_46da_b78c_3e6027d0be41).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa0acc0ac\_5fac\_4a42\_a3be\_e36db44994b0} = v_{49} - v_{50} \tag{286}$$

7.52 Species mwd087f76b_65dc_47f1_ba21_c43774457686

Name Pase3

Initial amount 0.0020 mol

This species takes part in six reactions (as a reactant in mwf8bb22e2_5aa3_4c25_a022_a266b1856a48, mw1d8c2435_bb85_4352_a25f_82033250579e and as a product in mw61305f93_7b2d_4a2d_8d16_f7be026d8671, mwcc31b497_6c50_446c_bbc2_6c5739507252 and as a modifier in mwf8bb22e2_5aa3_4c25_a022_a266b1856a48, mw1d8c2435_bb85_4352_a25f_82033250579e).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwd087f76b\_65dc\_47f1\_ba21\_c43774457686} = v_{52} + v_{53} - v_{51} - v_{54} \tag{287}$$

7.53 Species mw35f5adaa_d1c0_433c_817d_76e317f4cb15

Name pERK-Pase3

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwcc31b497_6c50_446c_bbc2_6c5739507252 and as a product in mw1d8c2435_bb85_4352_a25f_82033250579e and as a modifier in mwcc31b497_6c50_446c_bbc2_6c5739507252, mw1d8c2435_bb85_4352_a25f_82033250579e).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw35f5adaa\_d1c0\_433c\_817d\_76e317f4cb15} = v_{54} - v_{53} \tag{288}$$

7.54 Species mwa7e3103a_6394_472c_b0f4_8ed527f68604

Name ppERK-Pase3

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw61305f93_7b2d_4a2d_8d16_f7be026d8671 and as a product in mwf8bb22e2_5aa3_4c25_a022_a266b1856a48 and as a modifier in mwf8bb22e2_5aa3_4c25_a022_a266b1856a48, mw61305f93_7b2d_4a2d_8d16_f7be026d8671).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa7e3103a\_6394\_472c\_b0f4\_8ed527f68604} = v_{51} - v_{52} \tag{289}$$

7.55 Species mw5babe3d5_a9af_4dfd_ac01_35474ef64af2

Name ppERK-pEGF-EGFR2-pShc-Grb2-SOS

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwcf9f1b1d_e19a_4fa8_85ba_8f17e2cec730 and as a product in mw8dec1159_1925_45d9_af25_3cb709a5017c and as a modifier in mw8dec1159_1925_45d9_af25_3cb709a5017c, mwcf9f1b1d_e19a_4fa8_85ba_8f17e2cec730).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw5babe3d5\_a9af\_4dfd\_ac01\_35474ef64af2} = v_{55} - v_{56} \tag{290}$$

7.56 Species mw31ac308f_da36_4f73_830f_67f3e5b945d9

Name pSOS

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw8e331e43_16b4_478d_880b_d5a3244540e4 and as a product in mwcf9f1b1d_e19a_4fa8_85ba_8f17e2cec730, mw4685274a_2b55_429f_927f_3fd863592af6 and as a modifier in mw8e331e43_16b4_478d_880b_d5a3244540e4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw31ac308f\_da36\_4f73\_830f\_67f3e5b945d9} = v_{56} + v_{58} - v_{59} \tag{291}$$

7.57 Species mw31261227_9cd6_4059_a0bb_04dbf4888080

Name ppERK-pEGF-EGFR2-Grb2-SOS

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw4685274a_2b55_429f_927f_3fd863592af6 and as a product in mwa5c135b4_77e2_4411_98e1_2000c39d4b30 and as a modifier in mwa5c135b4_77e2_4411_98e1_2000c39d4b30, mw4685274a_2b55_429f_927f_3fd863592af6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw31261227\_9cd6\_4059\_a0bb\_04dbf4888080} = v_{57} - v_{58} \tag{292}$$

7.58 Species mw0a0ca6ba_cb28_44c7_a0c0_1593cb720966

Name ProEGFR

Initial amount 1 mol

This species takes part in two reactions (as a reactant in mw47dee769_daa0_4af4_978a_5ab17e504c2f and as a modifier in mw47dee769_daa0_4af4_978a_5ab17e504c2f).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw0a0ca6ba\_cb28\_44c7\_a0c0\_1593cb720966} = -v_{60} \tag{293}$$

7.59 Species mw06b8aada_c92a_48eb_8ee7_af3778cfe62f

Name pEGF-EGFR2-pShc-Grb2-SOS-cbl-EPn

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw363a5271_1f51_4d5e_87a7_42ea25cb5657 and as a product in mw3a87ca5a_845d_4ac4_8806_e343cbbfc630 and as a modifier in mw3a87ca5a_845d_4ac4_8806_e343cbbfc630, mw363a5271_1f51_4d5e_87a7_42ea25cb5657).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw06b8aada\_c92a\_48eb\_8ee7\_af3778cfe62f} = v_{62} - v_{63} \tag{294}$$

7.60 Species mwb2366216_0b3c_4f28_8303_fec92c68dd57

Name EPn

Initial amount 0.5 mol

This species takes part in 15 reactions (as a reactant in mw3a87ca5a_845d_4ac4_8806_e343cbbfc630, mwbac9e6ff_2df1_45eb_b3f4_4cae74c64014, mw6b159c8f_eee0_4337_b711_2e230c9e2cf6, mw2146635b_dc09_44be_97f3_940933f38925, mwd46c52b2_27ca_4fe0_9c59_04167b0db92a and as a product in mw363a5271_1f51_4d5e_87a7_42ea25cb5657, mweb93165f_cf03_48f1_b035_59d79e324314, mwc9b3b248_3290_452a_9b7c_8fdada3e6687, mw3eaece15_c282_46e1_baad_ab56a5664619, mw8453434c_1b7f_429e_8902_ca15dc0ba9e1 and as a modifier in mw3a87ca5a_845d_4ac4_8806_e343cbbfc630, mwbac9e6ff_2df1_45eb_b3f4_4cae74c64014, mw6b159c8f_eee0_4337_b711_2e230c9e2cf6, mw2146635b_dc09_44be_97f3_940933f38925, mwd46c52b2_27ca_4fe0_9c59_04167b0db92a).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwb2366216\_0b3c\_4f28\_8303\_fec92c68dd57} \\ = v_{63} + v_{66} + v_{69} + v_{114} + v_{117} - v_{62} - v_{65} - v_{68} - v_{113} - v_{116}\end{aligned} \tag{295}$$

7.61 Species mw1d5948e7_5504_4224_9d71_227911b4f1ee

Name pEGF-EGFR2-Grb2-SOS-cbl-EPn

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mweb93165f_cf03_48f1_b035_59d79e324314 and as a product in mwbac9e6ff_2df1_45eb_b3f4_4cae74c64014 and as a modifier in mwbac9e6ff_2df1_45eb_b3f4_4cae74c64014, mweb93165f_cf03_48f1_b035_59d79e324314).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw1d5948e7\_5504\_4224\_9d71\_227911b4f1ee} = v_{65} - v_{66} \tag{296}$$

7.62 Species mwec1b368b_8f73_47eb_9636_9956389836eb

Name pEGF-EGFR2-cbl

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw6b159c8f_eee0_4337_b711_2e230c9e2cf6 and as a product in mw85e457d1_73f8_4236_bb61_a128d300003f and as a modifier in mw85e457d1_73f8_4236_bb61_a128d300003f, mw6b159c8f_eee0_4337_b711_2e230c9e2cf6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwec1b368b\_8f73\_47eb\_9636\_9956389836eb} = v_{67} - v_{68} \tag{297}$$

7.63 Species mwa455ec7e_1a12_4659_95a2_a5695d09ca60

Name pEGF-EGFR2-cbl-EPn

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwc9b3b248_3290_452a_9b7c_8fdada3e6687 and as a product in mw6b159c8f_eee0_4337_b711_2e230c9e2cf6 and as a modifier in mw6b159c8f_eee0_4337_b711_2e230c9e2cf6, mwc9b3b248_3290_452a_9b7c_8fdada3e6687).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa455ec7e\_1a12\_4659\_95a2\_a5695d09ca60} = v_{68} - v_{69} \tag{298}$$

7.64 Species mw2ba1db9a_4483_44fa_a3a2_b4a5ea66898c

Name PI3K

Initial amount 0.4 mol

This species takes part in five reactions (as a reactant in mw77484632_4e33_468a_9937_24e9bfd0e17d and as a product in mwd15926b3_069a_4b16_a6fc_c0c15083d621, mw8453434c_1b7f_429e_8902_ca15dc0ba9e1 and as a modifier in mw77484632_4e33_468a_9937_24e9bfd0e17d, mwd15926b3_069a_4b16_a6fc_c0c15083d621).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw2ba1db9a\_4483\_44fa\_a3a2\_b4a5ea66898c} = v_{75} + v_{117} - v_{70} \tag{299}$$

7.65 Species mw0dc4e5eb_4366_4799_bebc_cfcffe5c06f5

Name pEGF-EGFR2-PI3K

Initial amount 0 mol

This species takes part in eight reactions (as a reactant in mw2c5858f3_0988_49b0_a94a_057853b84e91, mwd3a36af9_3ccc_4bb1_9867_3b9823ba4ac8, mw3cf723f4_c4fe_46e2_87e1_bab6a91d4583 and as a product in mw77484632_4e33_468a_9937_24e9bfd0e17d and as a modifier in mw77484632_4e33_468a_9937_24e9bfd0e17d, mw2c5858f3_0988_49b0_a94a_057853b84e91, mwd3a36af9_3ccc_4bb1_9867_3b9823ba4ac8, mw3cf723f4_c4fe_46e2_87e1_bab6a91d4583).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw0dc4e5eb\_4366\_4799\_bebc\_cfcffe5c06f5} = v_{70} - v_{71} - v_{72} - v_{115} \qquad (300)$$

7.66 Species mw1e591998_65c0_484e_8a3b_537a38d94de1

Name pEGF-EGFR2-pPI3K

Initial amount 0 mol

This species takes part in two reactions (as a product in mw2c5858f3_0988_49b0_a94a_057853b84e91 and as a modifier in mw2c5858f3_0988_49b0_a94a_057853b84e91).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw1e591998\_65c0\_484e\_8a3b\_537a38d94de1} = v_{71} \qquad (301)$$

7.67 Species mw78e207c4_4faf_4b48_8e22_1ee666e9cc4c

Name pPI3K

Initial amount 0 mol

This species takes part in seven reactions (as a reactant in mw9f000f29_2512_4d4a_9dd9_e59aaf296d31, mw3a5e0932_d50f_4fe6_b8cb_0ad649f305b0 and as a product in mwd3a36af9_3ccc_4bb1_9867_3b9823ba4ac8, mw5dcc8719_3180_4bd0_8797_08e256131961 and as a modifier in mwd3a36af9_3ccc_4bb1_9867_3b9823ba4ac8, mw9f000f29_2512_4d4a_9dd9_e59aaf296d31, mw3a5e0932_d50f_4fe6_b8cb_0ad649f305b0).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw78e207c4\_4faf\_4b48\_8e22\_1ee666e9cc4c} = v_{72} + v_{77} - v_{73} - v_{76} \qquad (302)$$

7.68 Species mwfc4a9c3d_3ebb_4033_8b7d_f4d7613d2078

Name TP4

Initial amount 0.2 mol

This species takes part in four reactions (as a reactant in mw9f000f29_2512_4d4a_9dd9_e59aaf296d31 and as a product in mwd15926b3_069a_4b16_a6fc_c0c15083d621 and as a modifier in mw9f000f29_2512_4d4a_9dd9_e59aaf296d31, mwd15926b3_069a_4b16_a6fc_c0c15083d621).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwfc4a9c3d\_3ebb\_4033\_8b7d\_f4d7613d2078} = v_{75} - v_{73} \qquad (303)$$

7.69 Species mwbd6bb050_89bd_41df_8cea_d2e1fb77bafe

Name TP4-pPI3K

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw837b5ad7_4a8c_4c55_94ff_0fdd63048044 and as a product in mw9f000f29_2512_4d4a_9dd9_e59aaf296d31 and as a modifier in mw9f000f29_2512_4d4a_9dd9_e59aaf296d31, mw837b5ad7_4a8c_4c55_94ff_0fdd63048044).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwbd6bb050\_89bd\_41df\_8cea\_d2e1fb77bafe} = v_{73} - v_{74} \tag{304}$$

7.70 Species mw7033dfd6_53c5_433b_a132_f8cb34dea20f

Name TP4-PI3K

Initial amount 0 mol

This species takes part in three reactions (as a reactant in mwd15926b3_069a_4b16_a6fc_c0c15083d621 and as a product in mw837b5ad7_4a8c_4c55_94ff_0fdd63048044 and as a modifier in mwd15926b3_069a_4b16_a6fc_c0c15083d621).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw7033dfd6\_53c5\_433b\_a132\_f8cb34dea20f} = v_{74} - v_{75} \tag{305}$$

7.71 Species mwb561d9f3_a9ed_4bdb_8d40_87be5cc3237a

Name PIP2

Initial amount 0.5 mol

This species takes part in three reactions (as a reactant in mw3a5e0932_d50f_4fe6_b8cb_0ad649f305b0 and as a product in mw52a97dfa_4e16_4604_98ec_72a9b405ad2d and as a modifier in mw3a5e0932_d50f_4fe6_b8cb_0ad649f305b0).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwb561d9f3\_a9ed\_4bdb\_8d40\_87be5cc3237a} = v_{111} - v_{76} \tag{306}$$

7.72 Species mw014cc419_b720_4b90_9192_2ec6e706c87d

Name pPI3K-PIP2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw5dcc8719_3180_4bd0_8797_08e256131961 and as a product in mw3a5e0932_d50f_4fe6_b8cb_0ad649f305b0 and as a modifier in mw3a5e0932_d50f_4fe6_b8cb_0ad649f305b0, mw5dcc8719_3180_4bd0_8797_08e256131961).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw014cc419\_b720\_4b90\_9192\_2ec6e706c87d} = v_{76} - v_{77} \tag{307}$$

7.73 Species mwd7f41594_8377_4e2e_9528_45d5a82ffdb4

Name PIP3

Initial amount 0 mol

This species takes part in seven reactions (as a reactant in mw376b0685_ef73_4fcc_94af_2ada24cf8a8b, mw52a97dfa_4e16_4604_98ec_72a9b405ad2d and as a product in mw5dcc8719_3180_4bd0_8797_08e256131961, mw12311a84_3f8d_40c6_8b14_961a8a58d1b6 and as a modifier in mw376b0685_ef73_4fcc_94af_2ada24cf8a8b, mw12311a84_3f8d_40c6_8b14_961a8a58d1b6, mw52a97dfa_4e16_4604_98ec_72a9b405ad2d).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwd7f41594\_8377\_4e2e\_9528\_45d5a82ffdb4} = v_{77} + v_{82} - v_{78} - v_{111} \quad (308)$$

7.74 Species mwcef73e0e_d195_4077_ae71_723664ee1602

Name Akt

Initial amount 0.2 mol

This species takes part in four reactions (as a reactant in mw376b0685_ef73_4fcc_94af_2ada24cf8a8b and as a product in mw2698f402_d00b_451e_8b22_93a322fe9a92 and as a modifier in mw376b0685_ef73_4fcc_94af_2ada24cf8a8b, mw2698f402_d00b_451e_8b22_93a322fe9a92).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwcef73e0e\_d195\_4077\_ae71\_723664ee1602} = v_{84} - v_{78} \quad (309)$$

7.75 Species mw62bf5275_ce02_4e86_b3b6_3f87a335e1de

Name Aktm

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mwcc7cfa9c_4945_403a_938e_b237c371a5ef and as a product in mw376b0685_ef73_4fcc_94af_2ada24cf8a8b, mw362ca1b3_224a_42fb_a14b_6ff467748a5e and as a modifier in mw376b0685_ef73_4fcc_94af_2ada24cf8a8b, mwcc7cfa9c_4945_403a_938e_b237c371a5ef, mw362ca1b3_224a_42fb_a14b_6ff467748a5e).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw62bf5275\_ce02\_4e86\_b3b6\_3f87a335e1de} = v_{78} + v_{88} - v_{79} \quad (310)$$

7.76 Species mw6e01967b_3e2a_433d_bec6_9f9cf3ba243c

Name PDK1

Initial amount 0.1 mol

This species takes part in four reactions (as a reactant in mwcc7cfa9c_4945_403a_938e_b237c371a5ef and as a product in mw31369230_1f14_45bd_be02_a44a275c6e31 and as a modifier in mwcc7cfa9c_4945_403a_938e_b237c371a5ef, mw31369230_1f14_45bd_be02_a44a275c6e31).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw6e01967b\_3e2a\_433d\_bec6\_9f9cf3ba243c} = v_{81} - v_{79} \tag{311}$$

7.77 Species mw6353aa36_d4a4_4254_8a1f_1f7f571d4233

Name Aktm-PDK1

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mw98da32e0_b061_40c5_9d32_40744134f3fa and as a product in mwcc7cfa9c_4945_403a_938e_b237c371a5ef, mw4a334f7d_9bce_4690_b623_a427ed66a174 and as a modifier in mwcc7cfa9c_4945_403a_938e_b237c371a5ef, mw98da32e0_b061_40c5_9d32_40744134f3fa, mw4a334f7d_9bce_4690_b623_a427ed66a174).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw6353aa36\_d4a4\_4254\_8a1f\_1f7f571d4233} = v_{79} + v_{91} - v_{80} \tag{312}$$

7.78 Species mwc1935afc_56b1_4a87_923c_ae6d82455d80

Name pAktm-PDK1

Initial amount 0 mol

This species takes part in five reactions (as a reactant in mw31369230_1f14_45bd_be02_a44a275c6e31, mw3994e898_7232_4b70_9c58_b3476e8655f5 and as a product in mw98da32e0_b061_40c5_9d32_40744134f3fa and as a modifier in mw31369230_1f14_45bd_be02_a44a275c6e31, mw3994e898_7232_4b70_9c58_b3476e8655f5).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwc1935afc\_56b1\_4a87\_923c\_ae6d82455d80} = v_{80} - v_{81} - v_{89} \tag{313}$$

7.79 Species mw3d81860d_d786_4fcc_b8bb_64f1a2d7739d

Name pAktm

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mw12311a84_3f8d_40c6_8b14_961a8a58d1b6, mwc5e0c166_6a3a_4913_9ed1_dafe97bdb371 and as a product in mw31369230_1f14_45bd_be02_a44a275c6e31 and as a modifier in mw31369230_1f14_45bd_be02_a44a275c6e31, mw12311a84_3f8d_40c6_8b14_961a8a58d1b6, mwc5e0c166_6a3a_4913_9ed1_dafe97bdb371).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw3d81860d\_d786\_4fcc\_b8bb\_64f1a2d7739d} = v_{81} - v_{82} - v_{86} \tag{314}$$

7.80 Species mw16796ffe_4764_4a9f_942e_149f42c1cd28

Name pAkt

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw028e8b3e_b531_4466_9c3a_e3fcf7fc9be9 and as a product in mw12311a84_3f8d_40c6_8b14_961a8a58d1b6 and as a modifier in mw12311a84_3f8d_40c6_8b14_961a8a58d1b6, mw028e8b3e_b531_4466_9c3a_e3fcf7fc9be9).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw16796ffe\_4764\_4a9f\_942e\_149f42c1cd28} = v_{82} - v_{85} \tag{315}$$

7.81 Species mwa6e82fc9_a0ce_461c_93c8_17f3c807c1a1

Name pAkt-Takt

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwf3d393e9_ae09_4eab_a39a_ed0eef0f54bc and as a product in mw028e8b3e_b531_4466_9c3a_e3fcf7fc9be9 and as a modifier in mwf3d393e9_ae09_4eab_a39a_ed0eef0f54bc, mw028e8b3e_b531_4466_9c3a_e3fcf7fc9be9).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwa6e82fc9\_a0ce\_461c\_93c8\_17f3c807c1a1} = v_{85} - v_{83} \tag{316}$$

7.82 Species mw236a3250_4c96_4f6e_b94c_ab3d12852801

Name Akt-Takt

Initial amount 0 mol

This species takes part in three reactions (as a reactant in mw2698f402_d00b_451e_8b22_93a322fe9a92 and as a product in mwf3d393e9_ae09_4eab_a39a_ed0eef0f54bc and as a modifier in mw2698f402_d00b_451e_8b22_93a322fe9a92).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw236a3250\_4c96\_4f6e\_b94c\_ab3d12852801} = v_{83} - v_{84} \tag{317}$$

7.83 Species mw11a8b702_b8ac_4513_b4aa_063e51089812

Name Takt

Initial amount 0.1 mol

This species takes part in twelve reactions (as a reactant in mw028e8b3e_b531_4466_9c3a_e3fcf7fc9be9, mwc5e0c166_6a3a_4913_9ed1_dafe97bdb371, mw3994e898_7232_4b70_9c58_b3476e8655f5 and as a product in mw2698f402_d00b_451e_8b22_93a322fe9a92, mw362ca1b3_224a_42fb_a14b_6ff467748a5e, mw4a334f7d_9bce_4690_b623_a427ed66a174 and as a modifier in mw2698f402_d00b_451e_8b22_93a322fe9a92, mw028e8b3e_b531_4466_9c3a_e3fcf7fc9be9,

mwc5e0c166_6a3a_4913_9ed1_dafe97bdb371, mw362ca1b3_224a_42fb_a14b_6ff467748a5e, mw3994e898_7232_4b70_9c58_b3476e8655f5, mw4a334f7d_9bce_4690_b623_a427ed66a174).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw11a8b702\_b8ac\_4513\_b4aa\_063e51089812} = v_{84} + v_{88} + v_{91} - v_{85} - v_{86} - v_{89} \tag{318}$$

7.84 Species mw1a0cb97a_b657_430b_963c_92217f643081

Name pAktm-Takt

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw94b3bae0_4da9_4358_a5ac_a46a5cbf621b and as a product in mwc5e0c166_6a3a_4913_9ed1_dafe97bdb371 and as a modifier in mwc5e0c166_6a3a_4913_9ed1_dafe97bdb371, mw94b3bae0_4da9_4358_a5ac_a46a5cbf621b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw1a0cb97a\_b657\_430b\_963c\_92217f643081} = v_{86} - v_{87} \tag{319}$$

7.85 Species mw9b937ca3_0d82_46d5_8f5a_0f9701002797

Name Aktm-Takt

Initial amount 0 mol

This species takes part in three reactions (as a reactant in mw362ca1b3_224a_42fb_a14b_6ff467748a5e and as a product in mw94b3bae0_4da9_4358_a5ac_a46a5cbf621b and as a modifier in mw362ca1b3_224a_42fb_a14b_6ff467748a5e).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw9b937ca3\_0d82\_46d5\_8f5a\_0f9701002797} = v_{87} - v_{88} \tag{320}$$

7.86 Species mw57a44eb0_ace7_4294_905a_219e87d3c281

Name pAktm-PDK1-Takt

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw75acd2d1_3fdf_4c3f_8d99_6d62f825d5e2 and as a product in mw3994e898_7232_4b70_9c58_b3476e8655f5 and as a modifier in mw3994e898_7232_4b70_9c58_b3476e8655f5, mw75acd2d1_3fdf_4c3f_8d99_6d62f825d5e2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw57a44eb0\_ace7\_4294\_905a\_219e87d3c281} = v_{89} - v_{90} \tag{321}$$

7.87 Species mwd746a5d5_5e65_4a4c_9f84_0e4a3cb7d2fc

Name Aktm-PDK1-Takt

Initial amount 0 mol

This species takes part in three reactions (as a reactant in mw4a334f7d_9bce_4690_b623_a427ed66a174 and as a product in mw75acd2d1_3fdf_4c3f_8d99_6d62f825d5e2 and as a modifier in mw4a334f7d_9bce_4690_b623_a427ed66a174).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwd746a5d5\_5e65\_4a4c\_9f84\_0e4a3cb7d2fc} = v_{90} - v_{91} \tag{322}$$

7.88 Species mwa6994523_5d45_4000_af0c_3e94073bf183

Name pAkt_total

Initial amount 0 mol

Involved in rule mwa6994523_5d45_4000_af0c_3e94073bf183

This species takes part in two reactions (as a modifier in mw950485f2_4463_4309_a4e4_cc81d16ffb7f, mw950485f2_4463_4309_a4e4_cc81d16ffb7f) and is also involved in one rule which determines this species' quantity.

7.89 Species mwdf92bdc0_f426_45b0_9ad0_876521f41312

Name pRaf1active

Initial amount 0 mol

This species takes part in three reactions (as a reactant in mw62f71309_e066_47d2_9b99_01f78a51c218 and as a product in mw950485f2_4463_4309_a4e4_cc81d16ffb7f and as a modifier in mw62f71309_e066_47d2_9b99_01f78a51c218).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwdf92bdc0\_f426\_45b0\_9ad0\_876521f41312} = v_{92} - v_{93} \tag{323}$$

7.90 Species mw13abe2a6_9905_40e5_8c23_3fc8834b572a

Name STAT3c

Initial amount 2 mol

This species takes part in seven reactions (as a reactant in mwe8647e48_f4a9_40f4_9b32_f89ded572e01, mw177fa7b0_f0be_4c3e_8b47_2ac4e13159a2 and as a product in mwe9988e4a_083c_4f8e_b154_3e599c9307b0, mwd189238c_e8f9_40be_b4ea_18a42bba1b4f, mw3eaece15_c282_46e1_baad_ab56a5664619 and as a modifier in mwe8647e48_f4a9_40f4_9b32_f89ded572e01, mw177fa7b0_f0be_4c3e_8b47_2ac4e13159a2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw13abe2a6\_9905\_40e5\_8c23\_3fc8834b572a} = v_{98} + v_{110} + v_{114} - v_{94} - v_{102} \tag{324}$$

7.91 Species mw2fd710a6_7fe2_4484_bca6_59c187bade8b

Name pEGF-EGFR2-STAT3c

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mw65b9e026_bc6c_4c94_8b37_8b9acdf50c8a, mw0fbf73ac_8427_4a8c_9b0e_c51676638be4 and as a product in mwe8647e48_f4a9_40f4_9b32_f89ded572e01 and as a modifier in mwe8647e48_f4a9_40f4_9b32_f89ded572e01, mw65b9e026_bc6c_4c94_8b37_8b9acdf50c8a, mw0fbf73ac_8427_4a8c_9b0e_c51676638be4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw2fd710a6\_7fe2\_4484\_bca6\_59c187bade8b} = v_{94} - v_{95} - v_{112} \tag{325}$$

7.92 Species mwb6a9aa2c_62e7_410f_9c33_dbe36dfcc4af

Name pSTAT3c

Initial amount 0 mol

This species takes part in ten reactions (as a reactant in mw1c9d29fa_bff4_4d2f_9d5f_f1791e4882a3, mwad97bd5a_3dae_49d9_990b_2e6574740618, mwf8bacf1a_6c1a_49b6_b344_2d3bd404a735, mwf8bacf1a_6c1a_49b6_b344_2d3bd404a735, mw177fa7b0_f0be_4c3e_8b47_2ac4e13159a2 and as a product in mw65b9e026_bc6c_4c94_8b37_8b9acdf50c8a and as a modifier in mw1c9d29fa_bff4_4d2f_9d5f_f1791e4882a3, mwad97bd5a_3dae_49d9_990b_2e6574740618, mwf8bacf1a_6c1a_49b6_b344_2d3bd404a735, mw177fa7b0_f0be_4c3e_8b47_2ac4e13159a2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwb6a9aa2c\_62e7\_410f\_9c33\_dbe36dfcc4af} = v_{95} - v_{96} - v_{97} - v_{99} - v_{99} - v_{102} \tag{326}$$

7.93 Species mw341082a0_8017_4cc7_9d00_b1211a196072

Name pEGF-EGFR2-pSTAT3c

Initial amount 0 mol

This species takes part in two reactions (as a product in mw1c9d29fa_bff4_4d2f_9d5f_f1791e4882a3 and as a modifier in mw1c9d29fa_bff4_4d2f_9d5f_f1791e4882a3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw341082a0\_8017\_4cc7\_9d00\_b1211a196072} = v_{96} \tag{327}$$

7.94 Species mwcea1f1c1_2f85_4af1_98ea_ef14cf580c09

Name PP1

Initial amount 0.5 mol

This species takes part in six reactions (as a reactant in mwad97bd5a_3dae_49d9_990b_2e6574740618, mwc9b945cf_3a14_4bd9_b253_7064498c75e2 and as a product in mwe9988e4a_083c_4f8e_b154_3e599c9307b0, mw75c6078f_fb76_4ca9_9fdd_e221e3ba57ad and as a modifier in mwad97bd5a_3dae_49d9_990b_2e6574740618, mwc9b945cf_3a14_4bd9_b253_7064498c75e2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwcea1f1c1\_2f85\_4af1\_98ea\_ef14cf580c09} = v_{98} + v_{101} - v_{97} - v_{100} \quad (328)$$

7.95 Species mwdc34472c_a6f9_4002_951d_e0e8da64eb42

Name pSTAT3c-PP1

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwe9988e4a_083c_4f8e_b154_3e599c9307b0 and as a product in mwad97bd5a_3dae_49d9_990b_2e6574740618 and as a modifier in mwad97bd5a_3dae_49d9_990b_2e6574740618, mwe9988e4a_083c_4f8e_b154_3e599c9307b0).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwdc34472c\_a6f9\_4002\_951d\_e0e8da64eb42} = v_{97} - v_{98} \quad (329)$$

7.96 Species mw472d5cb9_120e_4f60_bbae_1ae2552837dd

Name pSTAT3c-pSTAT3c-PP1

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw75c6078f_fb76_4ca9_9fdd_e221e3ba57ad and as a product in mwc9b945cf_3a14_4bd9_b253_7064498c75e2 and as a modifier in mwc9b945cf_3a14_4bd9_b253_7064498c75e2, mw75c6078f_fb76_4ca9_9fdd_e221e3ba57ad).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw472d5cb9\_120e\_4f60\_bbae\_1ae2552837dd} = v_{100} - v_{101} \quad (330)$$

7.97 Species mw4f575c55_7dff_45d7_94ad_cda9621d5b63

Name pSTAT3c-pSTAT3c

Initial amount 0 mol

This species takes part in six reactions (as a reactant in mwc9b945cf_3a14_4bd9_b253_7064498c75e2, mwec4127b5_6bcf_4128_aff4_a6b3c470f690 and as a product in mwf8bacf1a_6c1a_49b6_b344_2d3bd404a735 and as a modifier in mwf8bacf1a_6c1a_49b6_b344_2d3bd404a735, mwc9b945cf_3a14_4bd9_b253_7064498c75e2, mwec4127b5_6bcf_4128_aff4_a6b3c470f690).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw4f575c55\_7dff\_45d7\_94ad\_cda9621d5b63} = v_{99} - v_{100} - v_{103} \quad (331)$$

7.98 Species mwd2c465fb_eea7_499a_8ea4_f318a64cb9ee

Name STAT3c-pSTAT3c

Initial amount 0 mol

This species takes part in three reactions (as a product in mw75c6078f_fb76_4ca9_9fdd_e221e3ba57ad, mw177fa7b0_f0be_4c3e_8b47_2ac4e13159a2 and as a modifier in mw177fa7b0_f0be_4c3e_8b47_2ac4e13159a2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwd2c465fb\_eea7\_499a\_8ea4\_f318a64cb9ee} = v_{101} + v_{102} \tag{332}$$

7.99 Species mw4110f531_7513_4786_8896_7c9d969ff558

Name pSTAT3n-pSTAT3n

Initial amount 0 mol

This species takes part in five reactions (as a reactant in mw26fdabae_323b_4a78_b134_4c2eb70ea6a7 and as a product in mwec4127b5_6bcf_4128_aff4_a6b3c470f690, mw5c806b00_59a1_491e_99a1_2c932b2d5d7a and as a modifier in mw5c806b00_59a1_491e_99a1_2c932b2d5d7a, mw26fdabae_323b_4a78_b134_4c2eb70ea6a7).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw4110f531\_7513\_4786\_8896\_7c9d969ff558} = v_{103} + v_{104} - v_{105} \tag{333}$$

7.100 Species mwe3fd7f65_b0d1_44d9_b6f3_d2f7d332f664

Name pSTAT3n

Initial amount 0 mol

This species takes part in seven reactions (as a reactant in mw5c806b00_59a1_491e_99a1_2c932b2d5d7a, mw5c806b00_59a1_491e_99a1_2c932b2d5d7a, mwc38a99c8_74cf_49f2_a16b_f6610ca1a0a7, mw45d92b79_0656_4795_87d0_7a465949ca43 and as a modifier in mw5c806b00_59a1_491e_99a1_2c932b2d5d7a, mwc38a99c8_74cf_49f2_a16b_f6610ca1a0a7, mw45d92b79_0656_4795_87d0_7a465949ca43).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwe3fd7f65\_b0d1\_44d9\_b6f3\_d2f7d332f664} = -v_{104} - v_{104} - v_{107} - v_{108} \tag{334}$$

7.101 Species mw0e1be972_fded_4bff_a93d_091ec942485f

Name PP2

Initial amount 0.6 mol

This species takes part in six reactions (as a reactant in mw26fdabae_323b_4a78_b134_4c2eb70ea6a7, mw45d92b79_0656_4795_87d0_7a465949ca43 and as a product in mw3b0c171c_6d60_41ca_8193_83cd5e6c188c, mwb71945c2_03a8_4fad_a995_e1caeee98525 and as a modifier in mw26fdabae_323b_4a78_b134_4c2eb70ea6a7, mw45d92b79_0656_4795_87d0_7a465949ca43).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw0e1be972\_fded\_4bff\_a93d\_091ec942485f} = v_{106} + v_{109} - v_{105} - v_{108} \quad (335)$$

7.102 Species mw0facb8f2_95cf_4ddf_a959_b24ba64f320b

Name pSTAT3n-pSTAT3n-PP2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw3b0c171c_6d60_41ca_8193_83cd5e6c188c and as a product in mw26fdabae_323b_4a78_b134_4c2eb70ea6a7 and as a modifier in mw26fdabae_323b_4a78_b134_4c2eb70ea6a7, mw3b0c171c_6d60_41ca_8193_83cd5e6c188c).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw0facb8f2\_95cf\_4ddf\_a959\_b24ba64f320b} = v_{105} - v_{106} \quad (336)$$

7.103 Species mw9686f53e_d343_45fd_b441_9c992219546a

Name STAT3n-pSTAT3n

Initial amount 0 mol

This species takes part in three reactions (as a product in mw3b0c171c_6d60_41ca_8193_83cd5e6c188c, mwc38a99c8_74cf_49f2_a16b_f6610ca1a0a7 and as a modifier in mwc38a99c8_74cf_49f2_a16b_f6610ca1a0a7).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw9686f53e\_d343\_45fd\_b441\_9c992219546a} = v_{106} + v_{107} \quad (337)$$

7.104 Species mw960bddeb_e567_46dd_b2f3_ed5e6a5c7972

Name STAT3n

Initial amount 0 mol

This species takes part in five reactions (as a reactant in mwc38a99c8_74cf_49f2_a16b_f6610ca1a0a7, mwd189238c_e8f9_40be_b4ea_18a42bba1b4f and as a product in mwb71945c2_03a8_4fad_a995_e1caeee98525 and as a modifier in mwc38a99c8_74cf_49f2_a16b_f6610ca1a0a7, mwd189238c_e8f9_40be_b4ea_18a42bba1b4f).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw960bddeb\_e567\_46dd\_b2f3\_ed5e6a5c7972} = v_{109} - v_{107} - v_{110} \quad (338)$$

7.105 Species mw8c85ff7f_6368_4b11_a2ed_ce83481b55e6

Name pSTAT3n-PP2

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwb71945c2_03a8_4fad_a995_e1caeee98525 and as a product in mw45d92b79_0656_4795_87d0_7a465949ca43 and as a modifier in mw45d92b79_0656_4795_87d0_7a465949ca43, mwb71945c2_03a8_4fad_a995_e1caeee98525).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw8c85ff7f\_6368\_4b11\_a2ed\_ce83481b55e6} = v_{108} - v_{109} \tag{339}$$

7.106 Species mw9da19d39_6d91_41d0_b101_f7748391705a

Name pEGF-EGFR2-STAT3c-cbl

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw2146635b_dc09_44be_97f3_940933f38925 and as a product in mw0fbf73ac_8427_4a8c_9b0e_c51676638be4 and as a modifier in mw0fbf73ac_8427_4a8c_9b0e_c51676638be4, mw2146635b_dc09_44be_97f3_940933f38925).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw9da19d39\_6d91\_41d0\_b101\_f7748391705a} = v_{112} - v_{113} \tag{340}$$

7.107 Species mw741407c8_029b_44ed_9799_02eb9d90ec9a

Name pEGF-EGFR2-STAT3c-cbl-EPn

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw3eaece15_c282_46e1_baad_ab56a5664619 and as a product in mw2146635b_dc09_44be_97f3_940933f38925 and as a modifier in mw2146635b_dc09_44be_97f3_940933f38925, mw3eaece15_c282_46e1_baad_ab56a5664619).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw741407c8\_029b\_44ed\_9799\_02eb9d90ec9a} = v_{113} - v_{114} \tag{341}$$

7.108 Species mwbedcc124_dbf3_41ab_989e_6b0900d7590a

Name pEGF-EGFR2-PI3K-cbl

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mwd46c52b2_27ca_4fe0_9c59_04167b0db92a and as a product in mw3cf723f4_c4fe_46e2_87e1_bab6a91d4583 and as a modifier in mw3cf723f4_c4fe_46e2_87e1_bab6a91d4583, mwd46c52b2_27ca_4fe0_9c59_04167b0db92a).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mwbedcc124\_dbf3\_41ab\_989e\_6b0900d7590a} = v_{115} - v_{116} \tag{342}$$

7.109 Species mw71d03aab_fcb6_4f78_a788_48f183d0b931

Name pEGF-EGFR2-PI3K-cbl-EPn

Initial amount 0 mol

This species takes part in four reactions (as a reactant in mw8453434c_1b7f_429e_8902_ca15dc0ba9e1 and as a product in mwd46c52b2_27ca_4fe0_9c59_04167b0db92a and as a modifier in mwd46c52b2_27ca_4fe0_9c59_04167b0db92a, mw8453434c_1b7f_429e_8902_ca15dc0ba9e1).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mw71d03aab\_fcb6\_4f78\_a788\_48f183d0b931} = v_{116} - v_{117} \tag{343}$$

A Glossary of Systems Biology Ontology Terms

SBO:0000290 physical compartment: Specific location of space, that can be bounded or not. A physical compartment can have 1, 2 or 3 dimensions

SBML2LaTeX was developed by Andreas Dräger[a], Hannes Planatscher[a], Dieudonné M Wouamba[a], Adrian Schröder[a], Michael Hucka[b], Lukas Endler[c], Martin Golebiewski[d] and Andreas Zell[a]. Please see http://www.ra.cs.uni-tuebingen.de/software/SBML2LaTeX for more information.

[a]Center for Bioinformatics Tübingen (ZBIT), Germany
[b]California Institute of Technology, Beckman Institute BNMC, Pasadena, United States
[c]European Bioinformatics Institute, Wellcome Trust Genome Campus, Hinxton, United Kingdom
[d]EML Research gGmbH, Heidelberg, Germany