

SBML Model Report

Model name: “Stefan2008 - calmodulin allostery”



May 6, 2016

1 General Overview

This is a document in SBML Level 2 Version 3 format. This model was created by the following two authors: Melanie Stefan¹ and Lukas Endler² at July 15th 2008 at 2:18 p.m. and last time modified at June fourth 2014 at 11:21 a.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	67
events	0	constraints	0
reactions	352	function definitions	27
global parameters	61	unit definitions	0
rules	46	initial assignments	0

Model Notes

Stefan2008 - calmodulin allostery

An allosteric model for calmodulin activation, in which binding to calcium facilitates the transition between a low-affinity [tense (T)] and a high-affinity [relaxed (R)] state.

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This model is described in the article: [An allosteric model of calmodulin explains differential activation of PP2B and CaMKII](#). Stefan MI, Edelstein SJ, Le Novre N. Proc. Natl. Acad. Sci. U.S.A. 2008 Aug; 105(31): 10768-10773

Abstract:

Calmodulin plays a vital role in mediating bidirectional synaptic plasticity by activating either calcium/calmodulin-dependent protein kinase II (CaMKII) or protein phosphatase 2B (PP2B) at different calcium concentrations. We propose an allosteric model for calmodulin activation, in which binding to calcium facilitates the transition between a low-affinity [tense (T)] and a high-affinity [relaxed (R)] state. The four calcium-binding sites are assumed to be nonidentical. The model is consistent with previously reported experimental data for calcium binding to calmodulin. It also accounts for known properties of calmodulin that have been difficult to model so far, including the activity of nonsaturated forms of calmodulin (we predict the existence of open conformations in the absence of calcium), an increase in calcium affinity once calmodulin is bound to a target, and the differential activation of CaMKII and PP2B depending on calcium concentration.

This model is hosted on [BioModels Database](#) and identified by: [BIOMD0000000183](#).

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

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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 m²

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	Outside
compartment_0	Spine	0000290	3	10^{-15}	l	<input checked="" type="checkbox"/>	

3.1 Compartment [compartment_0](#)

This is a three dimensional compartment with a constant size of 10^{-15} litre.

Name Spine

SBO:0000290 physical compartment

4 Species

This model contains 67 species. Section 9 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
species_0	camR	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_1	ca	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_2	camR.ca1_A	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_3	camR.ca1_B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_4	camR.ca1_C	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_5	camR.ca1_D	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_6	camR.ca2_AB	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_7	camR.ca2_AC	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_8	camR.ca2_AD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_9	camR.ca2_BC	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_10	camR.ca2_BD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_11	camR.ca2_CD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_12	camR.ca3_ABC	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_13	camR.ca3_ABD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_14	camR.ca3_ACD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_15	camR.ca3_BCD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_16	camR.ca4_ABCD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_17	camT	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_18	camT.ca1_A	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_19	camT.ca1_B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_20	camT.ca1_C	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square
species_21	camT.ca1_D	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	\square	\square

Id	Name	Compartment	Derived Unit	Constant	Boundary Condi- tion
species_22	camT_ca2_AB	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_23	camT_ca2_AC	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_24	camT_ca2_AD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_25	camT_ca2_BC	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_26	camT_ca2_BD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_27	camT_ca2_CD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_28	camT_ca3_ABC	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_29	camT_ca3_ABD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_30	camT_ca3_ACD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_31	camT_ca3_BCD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_32	camT_ca4_ABCD	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_33	CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_34	camR_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_35	camR_ca1_A_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_36	camR_ca1_B_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_37	camR_ca1_C_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_38	camR_ca1_D_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_39	camR_ca2_AB_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_40	camR_ca2_AC_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_41	camR_ca2_AD_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_42	camR_ca2_BC_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_43	camR_ca2_BD_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_44	camR_ca2_CD_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_45	camR_ca3_ABC_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_46	camR_ca3_ABD_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_47	camR_ca3_ACD_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_48	camR_ca3_BCD_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>

Id	Name	Compartment	Derived Unit	Constant	Boundary Condi- tion
species_49	camR_ca4_ABCD_CaMKII	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_50	PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_51	camR_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_52	camR_ca1_A_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_53	camR_ca1_B_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_54	camR_ca1_C_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_55	camR_ca1_D_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_56	camR_ca2_AB_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_57	camR_ca2_AC_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_58	camR_ca2_AD_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_59	camR_ca2_BC_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_60	camR_ca2_BD_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_61	camR_ca2_CD_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_62	camR_ca3_ABC_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_63	camR_ca3_ABD_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_64	camR_ca3_ACD_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_65	camR_ca3_BCD_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>
species_66	camR_ca4_ABCD_PP2B	compartment_0	$\text{mol} \cdot \text{l}^{-1}$	<input type="checkbox"/>	<input type="checkbox"/>

5 Parameters

This model contains 61 global parameters.

Table 4: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
parameter_0	kon		1000000.000		<input checked="" type="checkbox"/>
parameter_1	koffRA		8.320		<input type="checkbox"/>
parameter_2	koffRB		0.017		<input type="checkbox"/>
parameter_3	koffRC		17.400		<input type="checkbox"/>
parameter_4	koffRD		0.015		<input type="checkbox"/>
parameter_5	koffTA		2101.010		<input type="checkbox"/>
parameter_6	koffTB		4.192		<input type="checkbox"/>
parameter_7	koffTC		4393.939		<input type="checkbox"/>
parameter_8	koffTD		3.662		<input type="checkbox"/>
parameter_9	kRT		1000000.000		<input checked="" type="checkbox"/>
parameter_10	kTR		48.379		<input type="checkbox"/>
parameter_11	cA		0.004		<input checked="" type="checkbox"/>
parameter_12	cB		0.004		<input checked="" type="checkbox"/>
parameter_13	cC		0.004		<input checked="" type="checkbox"/>
parameter_14	cD		0.004		<input checked="" type="checkbox"/>
parameter_15	konCaMKII		3200000.000		<input checked="" type="checkbox"/>
parameter_16	koffCaMKII		0.343		<input checked="" type="checkbox"/>
parameter_17	konPP2B		$4.6 \cdot 10^7$		<input checked="" type="checkbox"/>
parameter_18	koffPP2B		0.001		<input checked="" type="checkbox"/>
parameter_19	free_camR_ca3- _total		0.000		<input type="checkbox"/>
parameter_20	free_camT_ca3- _total		0.000		<input type="checkbox"/>
parameter_21	free_cam_ca3_total		0.000		<input type="checkbox"/>
parameter_22	cam_ca4_total		0.000		<input type="checkbox"/>
parameter_23	CaMKII_camR- _ca1		0.000		<input type="checkbox"/>
parameter_24	CaMKII_camR- _ca2		0.000		<input type="checkbox"/>
parameter_25	CaMKII_camR- _ca3		0.000		<input type="checkbox"/>
parameter_26	total_CaMKII- _bound		0.000		<input type="checkbox"/>
parameter_27	total CaMKII		$7 \cdot 10^{-5}$		<input type="checkbox"/>
parameter_28	CaMKIIbar		0.000		<input type="checkbox"/>
parameter_29	PP2B_camR_ca1		0.000		<input type="checkbox"/>
parameter_30	PP2B_camR_ca2		0.000		<input type="checkbox"/>

Id	Name	SBO	Value	Unit	Constant
parameter_31	PP2B_camR_ca3		0.000		<input type="checkbox"/>
parameter_32	total_PP2B_bound		0.000		<input type="checkbox"/>
parameter_33	total PP2B		$1.6 \cdot 10^{-6}$		<input type="checkbox"/>
parameter_34	PP2Bbar		0.000		<input type="checkbox"/>
parameter_35	camR_unbound		$9.7 \cdot 10^{-12}$		<input type="checkbox"/>
parameter_36	total camR		$9.7 \cdot 10^{-12}$		<input type="checkbox"/>
parameter_37	total camT		$2 \cdot 10^{-7}$		<input type="checkbox"/>
parameter_38	Rbar	$4.84976478640786 \cdot 10^{-5}$			<input type="checkbox"/>
parameter_39	cam_ca3_total		0.000		<input type="checkbox"/>
parameter_40	free_camR_ca2- _total		0.000		<input type="checkbox"/>
parameter_41	free_camT_ca2- _total		0.000		<input type="checkbox"/>
parameter_42	free_cam_ca2_total		0.000		<input type="checkbox"/>
parameter_43	cam_ca2_total		0.000		<input type="checkbox"/>
parameter_44	free_cam_ca1_total		0.000		<input type="checkbox"/>
parameter_45	cam_ca1_total		0.000		<input type="checkbox"/>
parameter_46	cam_ca0_total		$2.000097 \cdot 10^{-7}$		<input type="checkbox"/>
parameter_47	cam_total		$2.000097 \cdot 10^{-7}$		<input type="checkbox"/>
parameter_48	moles_bound_ca- _per_moles_cam		0.000		<input type="checkbox"/>
parameter_49	L		20670.000		<input checked="" type="checkbox"/>
parameter_50	KRA		$8.32 \cdot 10^{-6}$		<input checked="" type="checkbox"/>
parameter_51	KRB		$1.66 \cdot 10^{-8}$		<input checked="" type="checkbox"/>
parameter_52	KRC		$1.74 \cdot 10^{-5}$		<input checked="" type="checkbox"/>
parameter_53	KRD		$1.45 \cdot 10^{-8}$		<input checked="" type="checkbox"/>
parameter_54	alpha		0.000		<input type="checkbox"/>
parameter_55	beta		0.000		<input type="checkbox"/>
parameter_56	gamma		0.000		<input type="checkbox"/>
parameter_57	delta		0.000		<input type="checkbox"/>
parameter_58	epsilon	$4.84976478640786 \cdot 10^{-5}$			<input type="checkbox"/>
parameter_59	ybar		0.000		<input type="checkbox"/>
parameter_60	ybar/(1-ybar)		0.000		<input type="checkbox"/>

6 Function definitions

This is an overview of 27 function definitions.

6.1 Function definition `transition1_R_T`

Name Transition camR_ca1_X to camT_ca1_X

Arguments ka, b, species

Mathematical Expression

$$\text{species} \cdot \text{ka} \cdot \text{b}^{\frac{1}{2}} \quad (1)$$

6.2 Function definition [function_1](#)

Name function_4_Transition camT_ca1_A to camR_ca1_A

Arguments parameter_10, parameter_11, [species_18]

Mathematical Expression

$$\frac{[\text{species_18}] \cdot \text{parameter_10}}{\text{parameter_11}^{\frac{1}{2}}} \quad (2)$$

6.3 Function definition [function_2](#)

Name function_4_Transition camT_ca1_B to camR_ca1_B

Arguments parameter_10, parameter_12, [species_19]

Mathematical Expression

$$\frac{[\text{species_19}] \cdot \text{parameter_10}}{\text{parameter_12}^{\frac{1}{2}}} \quad (3)$$

6.4 Function definition [function_5](#)

Name function_4_Transition camR_ca2_AB to camT_ca2_AB

Arguments parameter_11, parameter_12, parameter_9, [species_6]

Mathematical Expression

$$[\text{species_6}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12})^{\frac{1}{2}} \quad (4)$$

6.5 Function definition [function_3](#)

Name function_4_Transition camT_ca1_C to camR_ca1_C

Arguments parameter_10, parameter_13, [species_20]

Mathematical Expression

$$\frac{[\text{species_20}] \cdot \text{parameter_10}}{\text{parameter_13}^{\frac{1}{2}}} \quad (5)$$

6.6 Function definition [function_6](#)

Name function_4_Transition camR_ca2_AC to camT_ca2_AC

Arguments parameter_11, parameter_13, parameter_9, [species_7]

Mathematical Expression

$$[\text{species_7}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_13})^{\frac{1}{2}} \quad (6)$$

6.7 Function definition [function_7](#)

Name function_4_Transition camR_ca2_AD to camT_ca2_AD

Arguments parameter_11, parameter_14, parameter_9, [species_8]

Mathematical Expression

$$[\text{species_8}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_14})^{\frac{1}{2}} \quad (7)$$

6.8 Function definition [function_4](#)

Name function_4_Transition camT_ca1_D to camR_ca1_D

Arguments parameter_10, parameter_14, [species_21]

Mathematical Expression

$$\frac{[\text{species_21}] \cdot \text{parameter_10}}{\text{parameter_14}^{\frac{1}{2}}} \quad (8)$$

6.9 Function definition [function_13](#)

Name function_4_Transition camT_ca2_AD to camR_ca2_AD

Arguments parameter_10, parameter_11, parameter_14, [species_24]

Mathematical Expression

$$\frac{[\text{species_24}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_14})^{\frac{1}{2}}} \quad (9)$$

6.10 Function definition [function_14](#)

Name function_4_Transition camT_ca2_BC to camR_ca2_BC

Arguments parameter_10, parameter_12, parameter_13, [species_25]

Mathematical Expression

$$\frac{[\text{species_25}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}}} \quad (10)$$

6.11 Function definition [function_15](#)

Name function_4_Transition camT_ca2_BD to camR_ca2_BD

Arguments parameter_10, parameter_12, parameter_14, [species_26]

Mathematical Expression

$$\frac{[\text{species_26}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}}} \quad (11)$$

6.12 Function definition [function_16](#)

Name function_4_Transition camT_ca2_CD to camR_ca2_CD

Arguments parameter_10, parameter_13, parameter_14, [species_27]

Mathematical Expression

$$\frac{[\text{species_27}] \cdot \text{parameter_10}}{(\text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \quad (12)$$

6.13 Function definition [function_17](#)

Name function_4_Transition camR_ca3_ABC to camT_ca3_ABC

Arguments parameter_11, parameter_12, parameter_13, parameter_9, [species_12]

Mathematical Expression

$$[\text{species_12}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}} \quad (13)$$

6.14 Function definition [function_18](#)

Name function_4_Transition camR_ca3_ABD to camT_ca3_ABD

Arguments parameter_11, parameter_12, parameter_14, parameter_9, [species_13]

Mathematical Expression

$$[\text{species_13}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}} \quad (14)$$

6.15 Function definition [function_19](#)

Name function_4_Transition camR_ca3_ACD to camT_ca3_ACD

Arguments parameter_11, parameter_13, parameter_14, parameter_9, [species_14]

Mathematical Expression

$$[\text{species_14}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \quad (15)$$

6.16 Function definition [function_20](#)

Name function_4_Transition camR_ca3_BCD to camT_ca3_BCD

Arguments parameter_12, parameter_13, parameter_14, parameter_9, [species_15]

Mathematical Expression

$$[\text{species_15}] \cdot \text{parameter_9} \cdot (\text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \quad (16)$$

6.17 Function definition [function_8](#)

Name function_4_Transition camR_ca2_BC to camT_ca2_BC

Arguments parameter_12, parameter_13, parameter_9, [species_9]

Mathematical Expression

$$[\text{species_9}] \cdot \text{parameter_9} \cdot (\text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}} \quad (17)$$

6.18 Function definition [function_9](#)

Name function_4_Transition camR_ca2_BD to camT_ca2_BD

Arguments parameter_12, parameter_14, parameter_9, [species_10]

Mathematical Expression

$$[\text{species_10}] \cdot \text{parameter_9} \cdot (\text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}} \quad (18)$$

6.19 Function definition [function_10](#)

Name function_4_Transition camR_ca2_CD to camT_ca2_CD

Arguments parameter_13, parameter_14, parameter_9, [species_11]

Mathematical Expression

$$[\text{species_11}] \cdot \text{parameter_9} \cdot (\text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \quad (19)$$

6.20 Function definition [function_11](#)

Name function_4_Transition camT_ca2_AB to camR_ca2_AB

Arguments parameter_10, parameter_11, parameter_12, [species_22]

Mathematical Expression

$$\frac{[\text{species_22}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12})^{\frac{1}{2}}} \quad (20)$$

6.21 Function definition [function_12](#)

Name function_4_Transition camT_ca2_AC to camR_ca2_AC

Arguments parameter_10, parameter_11, parameter_13, [species_23]

Mathematical Expression

$$\frac{[\text{species_23}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_13})^{\frac{1}{2}}} \quad (21)$$

6.22 Function definition [function_21](#)

Name function_4_Transition camT_ca3_ABC to camR_ca3_ABC

Arguments parameter_10, parameter_11, parameter_12, parameter_13, [species_28]

Mathematical Expression

$$\frac{[\text{species_28}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}}} \quad (22)$$

6.23 Function definition [function_22](#)

Name function_4_Transition camT_ca3_ABD to camR_ca3_ABD

Arguments parameter_10, parameter_11, parameter_12, parameter_14, [species_29]

Mathematical Expression

$$\frac{[\text{species_29}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}}} \quad (23)$$

6.24 Function definition [function_23](#)

Name function_4_Transition camT_ca3_ACD to camR_ca3_ACD

Arguments parameter_10, parameter_11, parameter_13, parameter_14, [species_30]

Mathematical Expression

$$\frac{[\text{species_30}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \quad (24)$$

6.25 Function definition [function_24](#)

Name function_4_Transition camT_ca3_BCD to camR_ca3_BCD

Arguments parameter_10, parameter_12, parameter_13, parameter_14, [species_31]

Mathematical Expression

$$\frac{[\text{species_31}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \quad (25)$$

6.26 Function definition [function_25](#)

Name function_4_Transition camR_ca4_ABCD to camT_ca4_ABCD

Arguments parameter_11, parameter_12, parameter_13, parameter_14, parameter_9, [species_16]

Mathematical Expression

$$[\text{species_16}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \quad (26)$$

6.27 Function definition `function_26`

Name `function_4_Transition` `camT_ca4_ABCD` to `camR_ca4_ABCD`

Arguments `parameter_10`, `parameter_11`, `parameter_12`, `parameter_13`, `parameter_14`, `[species_32]`

Mathematical Expression

$$\frac{[\text{species}_32] \cdot \text{parameter}_{10}}{(\text{parameter}_{11} \cdot \text{parameter}_{12} \cdot \text{parameter}_{13} \cdot \text{parameter}_{14})^{\frac{1}{2}}} \quad (27)$$

7 Rules

This is an overview of 46 rules.

7.1 Rule `parameter_1`

Rule `parameter_1` is an assignment rule for parameter `parameter_1`:

$$\text{parameter}_1 = \text{parameter}_{50} \cdot \text{parameter}_0 \quad (28)$$

7.2 Rule `parameter_20`

Rule `parameter_20` is an assignment rule for parameter `parameter_20`:

$$\text{parameter}_{20} = [\text{species}_{28}] + [\text{species}_{29}] + [\text{species}_{30}] + [\text{species}_{31}] \quad (29)$$

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

7.3 Rule `parameter_2`

Rule `parameter_2` is an assignment rule for parameter `parameter_2`:

$$\text{parameter}_2 = \text{parameter}_{51} \cdot \text{parameter}_0 \quad (30)$$

7.4 Rule `parameter_3`

Rule `parameter_3` is an assignment rule for parameter `parameter_3`:

$$\text{parameter}_3 = \text{parameter}_{52} \cdot \text{parameter}_0 \quad (31)$$

7.5 Rule `parameter_4`

Rule `parameter_4` is an assignment rule for parameter `parameter_4`:

$$\text{parameter}_4 = \text{parameter}_{53} \cdot \text{parameter}_0 \quad (32)$$

7.6 Rule `parameter_5`

Rule `parameter_5` is an assignment rule for parameter `parameter_5`:

$$\text{parameter_5} = \frac{\text{parameter_1}}{\text{parameter_11}} \quad (33)$$

7.7 Rule `parameter_6`

Rule `parameter_6` is an assignment rule for parameter `parameter_6`:

$$\text{parameter_6} = \frac{\text{parameter_2}}{\text{parameter_12}} \quad (34)$$

7.8 Rule `parameter_7`

Rule `parameter_7` is an assignment rule for parameter `parameter_7`:

$$\text{parameter_7} = \frac{\text{parameter_3}}{\text{parameter_13}} \quad (35)$$

7.9 Rule `parameter_8`

Rule `parameter_8` is an assignment rule for parameter `parameter_8`:

$$\text{parameter_8} = \frac{\text{parameter_4}}{\text{parameter_14}} \quad (36)$$

7.10 Rule `parameter_10`

Rule `parameter_10` is an assignment rule for parameter `parameter_10`:

$$\text{parameter_10} = \frac{\text{parameter_9}}{\text{parameter_49}} \quad (37)$$

7.11 Rule `parameter_19`

Rule `parameter_19` is an assignment rule for parameter `parameter_19`:

$$\text{parameter_19} = [\text{species_12}] + [\text{species_13}] + [\text{species_14}] + [\text{species_15}] \quad (38)$$

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

7.12 Rule `parameter_21`

Rule `parameter_21` is an assignment rule for parameter `parameter_21`:

$$\text{parameter_21} = \text{parameter_19} + \text{parameter_20} \quad (39)$$

7.13 Rule `parameter_22`

Rule `parameter_22` is an assignment rule for parameter `parameter_22`:

$$\text{parameter_22} = [\text{species_16}] + [\text{species_32}] + [\text{species_49}] + [\text{species_66}] \quad (40)$$

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

7.14 Rule `parameter_23`

Rule `parameter_23` is an assignment rule for parameter `parameter_23`:

$$\text{parameter_23} = [\text{species_35}] + [\text{species_36}] + [\text{species_37}] + [\text{species_38}] \quad (41)$$

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

7.15 Rule `parameter_25`

Rule `parameter_25` is an assignment rule for parameter `parameter_25`:

$$\text{parameter_25} = [\text{species_45}] + [\text{species_46}] + [\text{species_47}] + [\text{species_48}] \quad (42)$$

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

7.16 Rule `parameter_24`

Rule `parameter_24` is an assignment rule for parameter `parameter_24`:

$$\begin{aligned} \text{parameter_24} = & [\text{species_39}] + [\text{species_40}] + [\text{species_41}] \\ & + [\text{species_42}] + [\text{species_43}] + [\text{species_44}] \end{aligned} \quad (43)$$

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

7.17 Rule `parameter_26`

Rule `parameter_26` is an assignment rule for parameter `parameter_26`:

$$\text{parameter_26} = [\text{species_34}] + \text{parameter_23} + \text{parameter_24} + \text{parameter_25} + [\text{species_49}] \quad (44)$$

7.18 Rule `parameter_27`

Rule `parameter_27` is an assignment rule for parameter `parameter_27`:

$$\text{parameter_27} = \text{parameter_26} + [\text{species_33}] \quad (45)$$

7.19 Rule parameter_28

Rule parameter_28 is an assignment rule for parameter parameter_28:

$$\text{parameter_28} = \frac{\text{parameter_26}}{\text{parameter_27}} \quad (46)$$

7.20 Rule parameter_29

Rule parameter_29 is an assignment rule for parameter parameter_29:

$$\text{parameter_29} = [\text{species_52}] + [\text{species_53}] + [\text{species_54}] + [\text{species_55}] \quad (47)$$

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

7.21 Rule parameter_30

Rule parameter_30 is an assignment rule for parameter parameter_30:

$$\begin{aligned} \text{parameter_30} = & [\text{species_56}] + [\text{species_57}] + [\text{species_58}] \\ & + [\text{species_59}] + [\text{species_60}] + [\text{species_61}] \end{aligned} \quad (48)$$

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

7.22 Rule parameter_31

Rule parameter_31 is an assignment rule for parameter parameter_31:

$$\text{parameter_31} = [\text{species_62}] + [\text{species_63}] + [\text{species_64}] + [\text{species_65}] \quad (49)$$

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

7.23 Rule parameter_32

Rule parameter_32 is an assignment rule for parameter parameter_32:

$$\text{parameter_32} = [\text{species_51}] + \text{parameter_29} + \text{parameter_30} + \text{parameter_31} + [\text{species_66}] \quad (50)$$

7.24 Rule parameter_35

Rule parameter_35 is an assignment rule for parameter parameter_35:

$$\begin{aligned} \text{parameter_35} = & [\text{species_0}] + [\text{species_2}] + [\text{species_3}] + [\text{species_4}] + [\text{species_5}] + [\text{species_6}] \\ & + [\text{species_7}] + [\text{species_8}] + [\text{species_9}] + [\text{species_10}] + [\text{species_11}] \\ & + [\text{species_12}] + [\text{species_13}] + [\text{species_14}] + [\text{species_15}] + [\text{species_16}] \end{aligned} \quad (51)$$

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

7.25 Rule `parameter_33`

Rule `parameter_33` is an assignment rule for parameter `parameter_33`:

$$\text{parameter_33} = \text{parameter_32} + [\text{species_50}] \quad (52)$$

7.26 Rule `parameter_34`

Rule `parameter_34` is an assignment rule for parameter `parameter_34`:

$$\text{parameter_34} = \frac{\text{parameter_32}}{\text{parameter_33}} \quad (53)$$

7.27 Rule `parameter_37`

Rule `parameter_37` is an assignment rule for parameter `parameter_37`:

$$\begin{aligned} \text{parameter_37} = & [\text{species_17}] + [\text{species_18}] + [\text{species_19}] + [\text{species_20}] \\ & + [\text{species_21}] + [\text{species_22}] + [\text{species_23}] + [\text{species_24}] \\ & + [\text{species_25}] + [\text{species_26}] + [\text{species_27}] + [\text{species_28}] \\ & + [\text{species_29}] + [\text{species_30}] + [\text{species_31}] + [\text{species_32}] \end{aligned} \quad (54)$$

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

7.28 Rule `parameter_36`

Rule `parameter_36` is an assignment rule for parameter `parameter_36`:

$$\text{parameter_36} = \text{parameter_35} + \text{parameter_26} + \text{parameter_32} \quad (55)$$

7.29 Rule `parameter_39`

Rule `parameter_39` is an assignment rule for parameter `parameter_39`:

$$\text{parameter_39} = \text{parameter_25} + \text{parameter_31} + \text{parameter_21} \quad (56)$$

7.30 Rule `parameter_38`

Rule `parameter_38` is an assignment rule for parameter `parameter_38`:

$$\text{parameter_38} = \frac{\text{parameter_36}}{\text{parameter_36} + \text{parameter_37}} \quad (57)$$

7.31 Rule `parameter_40`

Rule `parameter_40` is an assignment rule for parameter `parameter_40`:

$$\text{parameter_40} = [\text{species_6}] + [\text{species_7}] + [\text{species_8}] + [\text{species_9}] + [\text{species_10}] + [\text{species_11}] \quad (58)$$

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

7.32 Rule parameter_41

Rule parameter_41 is an assignment rule for parameter parameter_41:

$$\begin{aligned} \text{parameter_41} = & [\text{species_22}] + [\text{species_23}] + [\text{species_24}] \\ & + [\text{species_25}] + [\text{species_26}] + [\text{species_27}] \end{aligned} \quad (59)$$

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

7.33 Rule parameter_42

Rule parameter_42 is an assignment rule for parameter parameter_42:

$$\text{parameter_42} = \text{parameter_40} + \text{parameter_41} \quad (60)$$

7.34 Rule parameter_43

Rule parameter_43 is an assignment rule for parameter parameter_43:

$$\text{parameter_43} = \text{parameter_42} + \text{parameter_24} + \text{parameter_30} \quad (61)$$

7.35 Rule parameter_44

Rule parameter_44 is an assignment rule for parameter parameter_44:

$$\begin{aligned} \text{parameter_44} = & [\text{species_2}] + [\text{species_3}] + [\text{species_4}] + [\text{species_5}] \\ & + [\text{species_18}] + [\text{species_19}] + [\text{species_20}] + [\text{species_21}] \end{aligned} \quad (62)$$

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

7.36 Rule parameter_45

Rule parameter_45 is an assignment rule for parameter parameter_45:

$$\text{parameter_45} = \text{parameter_44} + \text{parameter_23} + \text{parameter_29} \quad (63)$$

7.37 Rule parameter_46

Rule parameter_46 is an assignment rule for parameter parameter_46:

$$\text{parameter_46} = [\text{species_0}] + [\text{species_17}] + [\text{species_34}] + [\text{species_51}] \quad (64)$$

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

7.38 Rule parameter_47

Rule parameter_47 is an assignment rule for parameter parameter_47:

$$\text{parameter_47} = \text{parameter_46} + \text{parameter_45} + \text{parameter_43} + \text{parameter_39} + \text{parameter_22} \quad (65)$$

7.39 Rule parameter_48

Rule parameter_48 is an assignment rule for parameter parameter_48:

$$\text{parameter_48} = \frac{4 \cdot \text{parameter_22} + 3 \cdot \text{parameter_39} + 2 \cdot \text{parameter_43} + \text{parameter_45}}{\text{parameter_47}} \quad (66)$$

7.40 Rule parameter_54

Rule parameter_54 is an assignment rule for parameter parameter_54:

$$\text{parameter_54} = \frac{[\text{species_16}]}{[\text{species_16}] + [\text{species_32}]} \quad (67)$$

Derived unit dimensionless

7.41 Rule parameter_55

Rule parameter_55 is an assignment rule for parameter parameter_55:

$$\text{parameter_55} = \frac{\text{parameter_19}}{\text{parameter_21}} \quad (68)$$

7.42 Rule parameter_56

Rule parameter_56 is an assignment rule for parameter parameter_56:

$$\text{parameter_56} = \frac{\text{parameter_40}}{\text{parameter_42}} \quad (69)$$

7.43 Rule parameter_57

Rule parameter_57 is an assignment rule for parameter parameter_57:

$$\begin{aligned} &\text{parameter_57} & (70) \\ &= \frac{[\text{species_2}] + [\text{species_3}] + [\text{species_4}] + [\text{species_5}]}{[\text{species_2}] + [\text{species_3}] + [\text{species_4}] + [\text{species_5}] + [\text{species_18}] + [\text{species_19}] + [\text{species_20}] + [\text{species_21}]} \end{aligned}$$

Derived unit dimensionless

7.44 Rule parameter_58

Rule parameter_58 is an assignment rule for parameter parameter_58:

$$\text{parameter_58} = \frac{[\text{species_0}]}{[\text{species_0}] + [\text{species_17}]} \quad (71)$$

Derived unit dimensionless

7.45 Rule `parameter_59`

Rule `parameter_59` is an assignment rule for parameter `parameter_59`:

$$\text{parameter_59} = \frac{\text{parameter_48}}{4} \quad (72)$$

7.46 Rule `parameter_60`

Rule `parameter_60` is an assignment rule for parameter `parameter_60`:

$$\text{parameter_60} = \frac{\text{parameter_59}}{1 - \text{parameter_59}} \quad (73)$$

8 Reactions

This model contains 352 reactions. All reactions are listed in the following table and are subsequently described in detail. If a reaction is affected by a modifier, the identifier of this species is written above the reaction arrow.

Table 5: Overview of all reactions

Nº	Id	Name	Reaction Equation	SBO
1	reaction_0	Ca binding to camR site A	species_0 + species_1 \longrightarrow species_2	0000177
2	reaction_1	Ca binding to camR site B	species_0 + species_1 \longrightarrow species_3	0000177
3	reaction_2	Ca binding to camR site C	species_0 + species_1 \longrightarrow species_4	0000177
4	reaction_3	Ca binding to camR site D	species_0 + species_1 \longrightarrow species_5	0000177
5	reaction_4	Ca dissociating from camR_ca1_A site A	species_2 \longrightarrow species_0 + species_1	0000180
6	reaction_5	Ca dissociating from camR_ca1_B site B	species_3 \longrightarrow species_0 + species_1	0000180
7	reaction_6	Ca dissociating from camR_ca1_C site C	species_4 \longrightarrow species_0 + species_1	0000180
8	reaction_7	Ca dissociating from camR_ca1_D site D	species_5 \longrightarrow species_0 + species_1	0000180
9	reaction_8	Ca binding to camR_ca1_A site B	species_2 + species_1 \longrightarrow species_6	0000177
10	reaction_9	Ca binding to camR_ca1_A site C	species_2 + species_1 \longrightarrow species_7	0000177
11	reaction_10	Ca binding to camR_ca1_A site D	species_2 + species_1 \longrightarrow species_8	0000177
12	reaction_11	Ca binding to camR_ca1_B site A	species_3 + species_1 \longrightarrow species_6	0000177
13	reaction_12	Ca binding to camR_ca1_B site C	species_3 + species_1 \longrightarrow species_9	0000177
14	reaction_13	Ca binding to camR_ca1_B site D	species_3 + species_1 \longrightarrow species_10	0000177
15	reaction_14	Ca binding to camR_ca1_C site A	species_4 + species_1 \longrightarrow species_7	0000177
16	reaction_15	Ca binding to camR_ca1_C site B	species_4 + species_1 \longrightarrow species_9	0000177
17	reaction_16	Ca binding to camR_ca1_C site D	species_4 + species_1 \longrightarrow species_11	0000177
18	reaction_17	Ca binding to camR_ca1_D site A	species_5 + species_1 \longrightarrow species_8	0000177
19	reaction_18	Ca binding to camR_ca1_D site B	species_5 + species_1 \longrightarrow species_10	0000177
20	reaction_19	Ca binding to camR_ca1_D site C	species_5 + species_1 \longrightarrow species_11	0000177
21	reaction_20	Ca dissociating from camR_ca2_AB site B	species_6 \longrightarrow species_2 + species_1	0000180
22	reaction_21	Ca dissociating from camR_ca2_AC site C	species_7 \longrightarrow species_2 + species_1	0000180
23	reaction_22	Ca dissociating from camR_ca2_AD site D	species_8 \longrightarrow species_2 + species_1	0000180

Nº	Id	Name	Reaction Equation	SBO
24	reaction_23	Ca dissociating from camR_ca2_AB site A	species_6 \longrightarrow species_3 + species_1	0000180
25	reaction_24	Ca dissociating from camR_ca2_BC site C	species_9 \longrightarrow species_3 + species_1	0000180
26	reaction_25	Ca dissociating from camR_ca2_BD site D	species_10 \longrightarrow species_3 + species_1	0000180
27	reaction_26	Ca dissociating from camR_ca2_AC site A	species_7 \longrightarrow species_4 + species_1	0000180
28	reaction_27	Ca dissociating from camR_ca2_BC site B	species_9 \longrightarrow species_4 + species_1	0000180
29	reaction_28	Ca dissociating from camR_ca2_CD site D	species_11 \longrightarrow species_4 + species_1	0000180
30	reaction_29	Ca dissociating from camR_ca2_AD site A	species_8 \longrightarrow species_5 + species_1	0000180
31	reaction_30	Ca dissociating from camR_ca2_BD site B	species_10 \longrightarrow species_5 + species_1	0000180
32	reaction_31	Ca dissociating from camR_ca2_CD site C	species_11 \longrightarrow species_5 + species_1	0000180
33	reaction_32	Ca binding to camR_ca2_AB site C	species_6 + species_1 \longrightarrow species_12	0000177
34	reaction_33	Ca binding to camR_ca2_AB site D	species_6 + species_1 \longrightarrow species_13	0000177
35	reaction_34	Ca binding to camR_ca2_AC site B	species_7 + species_1 \longrightarrow species_12	0000177
36	reaction_35	Ca binding to camR_ca2_AC site D	species_7 + species_1 \longrightarrow species_14	0000177
37	reaction_36	Ca binding to camR_ca2_AD site B	species_8 + species_1 \longrightarrow species_13	0000177
38	reaction_37	Ca binding to camR_ca2_AD site C	species_8 + species_1 \longrightarrow species_14	0000177
39	reaction_38	Ca binding to camR_ca2_BC site A	species_9 + species_1 \longrightarrow species_12	0000177
40	reaction_39	Ca binding to camR_ca2_BC site D	species_9 + species_1 \longrightarrow species_15	0000177
41	reaction_40	Ca binding to camR_ca2_BD site A	species_10 + species_1 \longrightarrow species_13	0000177
42	reaction_41	Ca binding to camR_ca2_BD site C	species_10 + species_1 \longrightarrow species_15	0000177
43	reaction_42	Ca binding to camR_ca2_CD site A	species_11 + species_1 \longrightarrow species_14	0000177
44	reaction_43	Ca binding to camR_ca2_CD site B	species_11 + species_1 \longrightarrow species_15	0000177
45	reaction_44	Ca dissociating from camR_ca3_ABC site A	species_12 \longrightarrow species_9 + species_1	0000180
46	reaction_45	Ca dissociating from camR_ca3_ABC site B	species_12 \longrightarrow species_7 + species_1	0000180
47	reaction_46	Ca dissociating from camR_ca3_ABC site C	species_12 \longrightarrow species_6 + species_1	0000180
48	reaction_47	Ca dissociating from camR_ca3_ABD site A	species_13 \longrightarrow species_10 + species_1	0000180
49	reaction_48	Ca dissociating from camR_ca3_ABD site B	species_13 \longrightarrow species_8 + species_1	0000180
50	reaction_49	Ca dissociating from camR_ca3_ABD site D	species_13 \longrightarrow species_6 + species_1	0000180
51	reaction_50	Ca dissociating from camR_ca3_ACD site A	species_14 \longrightarrow species_11 + species_1	0000180
52	reaction_51	Ca dissociating from camR_ca3_ACD site C	species_14 \longrightarrow species_8 + species_1	0000180

Nº	Id	Name	Reaction Equation	SBO
53	reaction_52	Ca dissociating from camR_ca3_ACD site D	species_14 \longrightarrow species_7 + species_1	0000180
54	reaction_53	Ca dissociating from camR_ca3_BCD site B	species_15 \longrightarrow species_11 + species_1	0000180
55	reaction_54	Ca dissociating from camR_ca3_BCD site C	species_15 \longrightarrow species_10 + species_1	0000180
56	reaction_55	Ca dissociating from camR_ca3_BCD site D	species_15 \longrightarrow species_9 + species_1	0000180
57	reaction_56	Ca binding to camR_ca3_ABC site D	species_12 + species_1 \longrightarrow species_16	0000177
58	reaction_57	Ca binding to camR_ca3_ABD site C	species_13 + species_1 \longrightarrow species_16	0000177
59	reaction_58	Ca binding to camR_ca3_ACD site B	species_14 + species_1 \longrightarrow species_16	0000177
60	reaction_59	Ca binding to camR_ca3_BCD site A	species_15 + species_1 \longrightarrow species_16	0000177
61	reaction_60	Ca dissociating from camR_ca4_ABCD site D	species_16 \longrightarrow species_12 + species_1	0000180
62	reaction_61	Ca dissociating from camR_ca4_ABCD site C	species_16 \longrightarrow species_13 + species_1	0000180
63	reaction_62	Ca dissociating from camR_ca4_ABCD site B	species_16 \longrightarrow species_14 + species_1	0000180
64	reaction_63	Ca dissociating from camR_ca4_ABCD site A	species_16 \longrightarrow species_15 + species_1	0000180
65	reaction_64	Ca binding to camT site A	species_17 + species_1 \longrightarrow species_18	0000177
66	reaction_65	Ca binding to camT site B	species_17 + species_1 \longrightarrow species_19	0000177
67	reaction_66	Ca binding to camT site C	species_17 + species_1 \longrightarrow species_20	0000177
68	reaction_67	Ca binding to camT site D	species_17 + species_1 \longrightarrow species_21	0000177
69	reaction_68	Ca dissociating from camT_cal_A site A	species_18 \longrightarrow species_17 + species_1	0000180
70	reaction_69	Ca dissociating from camT_cal_B site B	species_19 \longrightarrow species_17 + species_1	0000180
71	reaction_70	Ca dissociating from camT_cal_C site C	species_20 \longrightarrow species_17 + species_1	0000180
72	reaction_71	Ca dissociating from camT_cal_D site D	species_21 \longrightarrow species_17 + species_1	0000180
73	reaction_72	Ca binding to camT_cal_A site B	species_18 + species_1 \longrightarrow species_22	0000177
74	reaction_73	Ca binding to camT_cal_A site C	species_18 + species_1 \longrightarrow species_23	0000177
75	reaction_74	Ca binding to camT_cal_A site D	species_18 + species_1 \longrightarrow species_24	0000177
76	reaction_75	Ca binding to camT_cal_B site A	species_19 + species_1 \longrightarrow species_22	0000177
77	reaction_76	Ca binding to camT_cal_B site C	species_19 + species_1 \longrightarrow species_25	0000177
78	reaction_77	Ca binding to camT_cal_B site D	species_19 + species_1 \longrightarrow species_26	0000177
79	reaction_78	Ca binding to camT_cal_C site A	species_20 + species_1 \longrightarrow species_23	0000177
80	reaction_79	Ca binding to camT_cal_C site B	species_20 + species_1 \longrightarrow species_25	0000177
81	reaction_80	Ca binding to camT_cal_C site D	species_20 + species_1 \longrightarrow species_27	0000177

Nº	Id	Name	Reaction Equation	SBO
82	reaction_81	Ca binding to camT_ca1_D site A	$\text{species_21} + \text{species_1} \longrightarrow \text{species_24}$	0000177
83	reaction_82	Ca binding to camT_ca1_D site B	$\text{species_21} + \text{species_1} \longrightarrow \text{species_26}$	0000177
84	reaction_83	Ca binding to camT_ca1_D site C	$\text{species_21} + \text{species_1} \longrightarrow \text{species_27}$	0000177
85	reaction_84	Ca dissociating from camT_ca2_AB site A	$\text{species_22} \longrightarrow \text{species_19} + \text{species_1}$	0000180
86	reaction_85	Ca dissociating from camT_ca2_AB site B	$\text{species_22} \longrightarrow \text{species_18} + \text{species_1}$	0000180
87	reaction_86	Ca dissociating from camT_ca2_AC site A	$\text{species_23} \longrightarrow \text{species_20} + \text{species_1}$	0000180
88	reaction_87	Ca dissociating from camT_ca2_AC site C	$\text{species_23} \longrightarrow \text{species_18} + \text{species_1}$	0000180
89	reaction_88	Ca dissociating from camT_ca2_AD site A	$\text{species_24} \longrightarrow \text{species_21} + \text{species_1}$	0000180
90	reaction_89	Ca dissociating from camT_ca2_AD site D	$\text{species_24} \longrightarrow \text{species_18} + \text{species_1}$	0000180
91	reaction_90	Ca dissociating from camT_ca2_BC site B	$\text{species_25} \longrightarrow \text{species_20} + \text{species_1}$	0000180
92	reaction_91	Ca dissociating from camT_ca2_BC site C	$\text{species_25} \longrightarrow \text{species_19} + \text{species_1}$	0000180
93	reaction_92	Ca dissociating from camT_ca2_BD site B	$\text{species_26} \longrightarrow \text{species_21} + \text{species_1}$	0000180
94	reaction_93	Ca dissociating from camT_ca2_BD site D	$\text{species_26} \longrightarrow \text{species_19} + \text{species_1}$	0000180
95	reaction_94	Ca dissociating from camT_ca2_CD site C	$\text{species_27} \longrightarrow \text{species_21} + \text{species_1}$	0000180
96	reaction_95	Ca dissociating from camT_ca2_CD site D	$\text{species_27} \longrightarrow \text{species_20} + \text{species_1}$	0000180
97	reaction_96	Ca binding to camT_ca2_AB site C	$\text{species_22} + \text{species_1} \longrightarrow \text{species_28}$	0000177
98	reaction_97	Ca binding to camT_ca2_AB site D	$\text{species_22} + \text{species_1} \longrightarrow \text{species_29}$	0000177
99	reaction_98	Ca binding to camT_ca2_AC site B	$\text{species_23} + \text{species_1} \longrightarrow \text{species_28}$	0000177
100	reaction_99	Ca binding to camT_ca2_AC site D	$\text{species_23} + \text{species_1} \longrightarrow \text{species_30}$	0000177
101	reaction_100	Ca binding to camT_ca2_AD site B	$\text{species_24} + \text{species_1} \longrightarrow \text{species_29}$	0000177
102	reaction_101	Ca binding to camT_ca2_AD site C	$\text{species_24} + \text{species_1} \longrightarrow \text{species_30}$	0000177
103	reaction_102	Ca binding to camT_ca2_BC site A	$\text{species_25} + \text{species_1} \longrightarrow \text{species_28}$	0000177
104	reaction_103	Ca binding to camT_ca2_BC site D	$\text{species_25} + \text{species_1} \longrightarrow \text{species_31}$	0000177
105	reaction_104	Ca binding to camT_ca2_BD site A	$\text{species_26} + \text{species_1} \longrightarrow \text{species_29}$	0000177
106	reaction_105	Ca binding to camT_ca2_BD site C	$\text{species_26} + \text{species_1} \longrightarrow \text{species_31}$	0000177
107	reaction_106	Ca binding to camT_ca2_CD site A	$\text{species_27} + \text{species_1} \longrightarrow \text{species_30}$	0000177
108	reaction_107	Ca binding to camT_ca2_CD site B	$\text{species_27} + \text{species_1} \longrightarrow \text{species_31}$	0000180
109	reaction_108	Ca dissociating from camT_ca3_ABC site B	$\text{species_28} \longrightarrow \text{species_23} + \text{species_1}$	0000180
110	reaction_109	Ca dissociating from camT_ca3_ABC site A	$\text{species_28} \longrightarrow \text{species_25} + \text{species_1}$	0000180

Nº	Id	Name	Reaction Equation	SBO
111	reaction_110	Ca dissociating from camT_ca3_ABD site D	species_29 \longrightarrow species_22 + species_1	0000180
112	reaction_111	Ca dissociating from camT_ca3_ABD site B	species_29 \longrightarrow species_24 + species_1	0000180
113	reaction_112	Ca dissociating from camT_ca3_ABD site A	species_29 \longrightarrow species_26 + species_1	0000180
114	reaction_113	Ca dissociating from camT_ca3_ACD site D	species_30 \longrightarrow species_23 + species_1	0000180
115	reaction_114	Ca dissociating from camT_ca3_ACD site C	species_30 \longrightarrow species_24 + species_1	0000180
116	reaction_115	Ca dissociating from camT_ca3_ACD site A	species_30 \longrightarrow species_27 + species_1	0000180
117	reaction_116	Ca dissociating from camT_ca3_BCD site D	species_31 \longrightarrow species_25 + species_1	0000180
118	reaction_117	Ca dissociating from camT_ca3_BCD site C	species_31 \longrightarrow species_26 + species_1	0000180
119	reaction_118	Ca dissociating from camT_ca3_BCD site B	species_31 \longrightarrow species_27 + species_1	0000180
120	reaction_119	Ca binding to camT_ca3_ABC site D	species_28 + species_1 \longrightarrow species_32	0000177
121	reaction_120	Ca binding to camT_ca3_ABD site C	species_29 + species_1 \longrightarrow species_32	0000177
122	reaction_121	Ca binding to camT_ca3_ACD site B	species_30 + species_1 \longrightarrow species_32	0000177
123	reaction_122	Ca binding to camT_ca3_BCD site A	species_31 + species_1 \longrightarrow species_32	0000177
124	reaction_123	Ca dissociating from camT_ca4_ABCD site D	species_32 \longrightarrow species_28 + species_1	0000180
125	reaction_124	Ca dissociating from camT_ca4_ABCD site C	species_32 \longrightarrow species_29 + species_1	0000180
126	reaction_125	Ca dissociating from camT_ca4_ABCD site B	species_32 \longrightarrow species_30 + species_1	0000180
127	reaction_126	Ca dissociating from camT_ca4_ABCD site A	species_32 \longrightarrow species_31 + species_1	0000180
128	reaction_127	Transition camR to camT	species_0 \longrightarrow species_17	0000181
129	reaction_128	Transition camT to camR	species_17 \longrightarrow species_0	0000181
130	reaction_129	Transition camR_ca1_A to camT_ca1_A	species_2 \longrightarrow species_18	0000181
131	reaction_130	Transition camR_ca1_B to camT_ca1_B	species_3 \longrightarrow species_19	0000181
132	reaction_131	Transition camR_ca1_C to camT_ca1_C	species_4 \longrightarrow species_20	0000181
133	reaction_132	Transition camR_ca1_D to camT_ca1_D	species_5 \longrightarrow species_21	0000181
134	reaction_133	Transition camT_ca1_A to camR_ca1_A	species_18 \longrightarrow species_2	0000181
135	reaction_134	Transition camT_ca1_B to camR_ca1_B	species_19 \longrightarrow species_3	0000181
136	reaction_135	Transition camT_ca1_C to camR_ca1_C	species_20 \longrightarrow species_4	0000181
137	reaction_136	Transition camT_ca1_D to camR_ca1_D	species_21 \longrightarrow species_5	0000181
138	reaction_137	Transition camR_ca2_AB to camT_ca2_AB	species_6 \longrightarrow species_22	0000181
139	reaction_138	Transition camR_ca2_AC to camT_ca2_AC	species_7 \longrightarrow species_23	0000181

Nº	Id	Name	Reaction Equation	SBO
140	reaction_139	Transition camR_ca2_AD to camT_ca2_AD	species_8 \longrightarrow species_24	0000181
141	reaction_140	Transition camR_ca2_BC to camT_ca2_BC	species_9 \longrightarrow species_25	0000181
142	reaction_141	Transition camR_ca2_BD to camT_ca2_BD	species_10 \longrightarrow species_26	0000181
143	reaction_142	Transition camR_ca2_CD to camT_ca2_CD	species_11 \longrightarrow species_27	0000181
144	reaction_143	Transition camT_ca2_AB to camR_ca2_AB	species_22 \longrightarrow species_6	0000181
145	reaction_144	Transition camT_ca2_AC to camR_ca2_AC	species_23 \longrightarrow species_7	0000181
146	reaction_145	Transition camT_ca2_AD to camR_ca2_AD	species_24 \longrightarrow species_8	0000181
147	reaction_146	Transition camT_ca2_BC to camR_ca2_BC	species_25 \longrightarrow species_9	0000181
148	reaction_147	Transition camT_ca2_BD to camR_ca2_BD	species_26 \longrightarrow species_10	0000181
149	reaction_148	Transition camT_ca2_CD to camR_ca2_CD	species_27 \longrightarrow species_11	0000181
150	reaction_149	Transition camR_ca3_ABC to camT_ca3- _ABC	species_12 \longrightarrow species_28	0000181
151	reaction_150	Transition camR_ca3_ABD to camT_ca3- _ABD	species_13 \longrightarrow species_29	0000181
152	reaction_151	Transition camR_ca3_ACD to camT_ca3- _ACD	species_14 \longrightarrow species_30	0000181
153	reaction_152	Transition camR_ca3_BCD to camT_ca3- _BCD	species_15 \longrightarrow species_31	0000181
154	reaction_153	Transition camT_ca3_ABC to camR_ca3- _ABC	species_28 \longrightarrow species_12	0000181
155	reaction_154	Transition camT_ca3_ABD to camR_ca3- _ABD	species_29 \longrightarrow species_13	0000181
156	reaction_155	Transition camT_ca3_ACD to camR_ca3- _ACD	species_30 \longrightarrow species_14	0000181
157	reaction_156	Transition camT_ca3_BCD to camR_ca3- _BCD	species_31 \longrightarrow species_15	0000181
158	reaction_157	Transition camR_ca4_ABCD to camT_ca4- _ABCD	species_16 \longrightarrow species_32	0000181

Nº	Id	Name	Reaction Equation	SBO
159	reaction_158	Transition camT_ca4_ABCD to camR_ca4- _ABCD	species_32 \longrightarrow species_16	0000177
160	reaction_159	CaMKII binding to camR	species_0 + species_33 \longrightarrow species_34	0000177
161	reaction_160	CaMKII binding to camR_ca1_A	species_2 + species_33 \longrightarrow species_35	0000177
162	reaction_161	CaMKII binding to camR_ca1_B	species_3 + species_33 \longrightarrow species_36	0000177
163	reaction_162	CaMKII binding to camR_ca1_C	species_4 + species_33 \longrightarrow species_37	0000177
164	reaction_163	CaMKII binding to camR_ca1_D	species_5 + species_33 \longrightarrow species_38	0000177
165	reaction_164	CaMKII binding to camR_ca2_AB	species_6 + species_33 \longrightarrow species_39	0000177
166	reaction_165	CaMKII binding to camR_ca2_AC	species_7 + species_33 \longrightarrow species_40	0000177
167	reaction_166	CaMKII binding to camR_ca2_AD	species_8 + species_33 \longrightarrow species_41	
168	reaction_167	CaMKII binding to camR_ca2_BC	species_9 + species_33 \longrightarrow species_42	0000177
169	reaction_168	CaMKII binding to camR_ca2_BD	species_10 + species_33 \longrightarrow species_43	0000177
170	reaction_169	CaMKII binding to camR_ca2_CD	species_11 + species_33 \longrightarrow species_44	0000177
171	reaction_170	CaMKII binding to camR_ca3_ABC	species_12 + species_33 \longrightarrow species_45	0000177
172	reaction_171	CaMKII binding to camR_ca3 ABD	species_13 + species_33 \longrightarrow species_46	0000177
173	reaction_172	CaMKII binding to camR_ca3 ACD	species_14 + species_33 \longrightarrow species_47	0000177
174	reaction_173	CaMKII binding to camR_ca3 BCD	species_15 + species_33 \longrightarrow species_48	0000177
175	reaction_174	CaMKII binding to camR_ca4 ABCD	species_16 + species_33 \longrightarrow species_49	0000177
176	reaction_175	CaMKII dissociation from camR	species_34 \longrightarrow species_0 + species_33	0000180
177	reaction_176	CaMKII dissociation from camR_ca1_A	species_35 \longrightarrow species_2 + species_33	0000180
178	reaction_177	CaMKII dissociation from camR_ca1_B	species_36 \longrightarrow species_3 + species_33	0000180
179	reaction_178	CaMKII dissociation from camR_ca1_C	species_37 \longrightarrow species_4 + species_33	0000180
180	reaction_179	CaMKII dissociation from camR_ca1_D	species_38 \longrightarrow species_5 + species_33	0000180
181	reaction_180	CaMKII dissociation from camR_ca2_AB	species_39 \longrightarrow species_6 + species_33	0000180
182	reaction_181	CaMKII dissociation from camR_ca2_AC	species_40 \longrightarrow species_7 + species_33	0000180
183	reaction_182	CaMKII dissociation from camR_ca2_AD	species_41 \longrightarrow species_8 + species_33	0000180
184	reaction_183	CaMKII dissociation from camR_ca2_BC	species_42 \longrightarrow species_9 + species_33	0000180
185	reaction_184	CaMKII dissociation from camR_ca2_BD	species_43 \longrightarrow species_10 + species_33	0000180
186	reaction_185	CaMKII dissociation from camR_ca2_CD	species_44 \longrightarrow species_11 + species_33	0000180

Nº	Id	Name	Reaction Equation	SBO
187	reaction_186	CaMKII dissociation from camR.ca3_ABC	species_45 \longrightarrow species_12 + species_33	0000180
188	reaction_187	CaMKII dissociation from camR.ca3_ABD	species_46 \longrightarrow species_13 + species_33	0000180
189	reaction_188	CaMKII dissociation from camR.ca3_ACD	species_47 \longrightarrow species_14 + species_33	0000180
190	reaction_189	CaMKII dissociation from camR.ca3_BCD	species_48 \longrightarrow species_15 + species_33	0000180
191	reaction_190	CaMKII dissociation from camR.ca4_ABCD	species_49 \longrightarrow species_16 + species_33	0000180
192	reaction_191	PP2B binding to camR	species_0 + species_50 \longrightarrow species_51	0000177
193	reaction_192	PP2B binding to camR.ca1_A	species_2 + species_50 \longrightarrow species_52	0000177
194	reaction_193	PP2B binding to camR.ca1_B	species_3 + species_50 \longrightarrow species_53	0000177
195	reaction_194	PP2B binding to camR.ca1_C	species_4 + species_50 \longrightarrow species_54	0000177
196	reaction_195	PP2B binding to camR.ca1_D	species_5 + species_50 \longrightarrow species_55	0000177
197	reaction_196	PP2B binding to camR.ca2_AB	species_6 + species_50 \longrightarrow species_56	0000177
198	reaction_197	PP2B binding to camR.ca2_AC	species_7 + species_50 \longrightarrow species_57	0000177
199	reaction_198	PP2B binding to camR.ca2_AD	species_8 + species_50 \longrightarrow species_58	0000177
200	reaction_199	PP2B binding to camR.ca2_BC	species_9 + species_50 \longrightarrow species_59	0000177
201	reaction_200	PP2B binding to camR.ca2_BD	species_10 + species_50 \longrightarrow species_60	0000177
202	reaction_201	PP2B binding to camR.ca2_CD	species_11 + species_50 \longrightarrow species_61	0000177
203	reaction_202	PP2B binding to camR.ca3_ABC	species_12 + species_50 \longrightarrow species_62	0000177
204	reaction_203	PP2B binding to camR.ca3_ABD	species_13 + species_50 \longrightarrow species_63	0000177
205	reaction_204	PP2B binding to camR.ca3_ACD	species_14 + species_50 \longrightarrow species_64	0000177
206	reaction_205	PP2B binding to camR.ca3_BCD	species_15 + species_50 \longrightarrow species_65	0000177
207	reaction_206	PP2B binding to camR.ca4_ABCD	species_16 + species_50 \longrightarrow species_66	0000177
208	reaction_207	PP2B dissociation from camR	species_51 \longrightarrow species_0 + species_50	0000180
209	reaction_208	PP2B dissociation from camR.ca1_A	species_52 \longrightarrow species_2 + species_50	0000180
210	reaction_209	PP2B dissociation from camR.ca1_B	species_53 \longrightarrow species_3 + species_50	0000180
211	reaction_210	PP2B dissociation from camR.ca1_C	species_54 \longrightarrow species_4 + species_50	0000180
212	reaction_211	PP2B dissociation from camR.ca1_D	species_55 \longrightarrow species_5 + species_50	0000180
213	reaction_212	PP2B dissociation from camR.ca2_AB	species_56 \longrightarrow species_6 + species_50	0000180
214	reaction_213	PP2B dissociation from camR.ca2_AC	species_57 \longrightarrow species_7 + species_50	0000180
215	reaction_214	PP2B dissociation from camR.ca2_AD	species_58 \longrightarrow species_8 + species_50	0000180

Nº	Id	Name	Reaction Equation	SBO
216	reaction_215	PP2B dissociation from camR.ca2_BC	species_59 \longrightarrow species_9 + species_50	0000180
217	reaction_216	PP2B dissociation from camR.ca2_BD	species_60 \longrightarrow species_10 + species_50	0000180
218	reaction_217	PP2B dissociation from camR.ca2_CD	species_61 \longrightarrow species_11 + species_50	0000180
219	reaction_218	PP2B dissociation from camR.ca3_ABC	species_62 \longrightarrow species_12 + species_50	0000180
220	reaction_219	PP2B dissociation from camR.ca3_ABD	species_63 \longrightarrow species_13 + species_50	0000180
221	reaction_220	PP2B dissociation from camR.ca3_ACD	species_64 \longrightarrow species_14 + species_50	0000180
222	reaction_221	PP2B dissociation from camR.ca3_BCD	species_65 \longrightarrow species_15 + species_50	0000180
223	reaction_222	PP2B dissociation from camR.ca4_ABCD	species_66 \longrightarrow species_16 + species_50	0000180
224	reaction_223	Ca binding to camR.CaMKII site A	species_34 + species_1 \longrightarrow species_35	0000177
225	reaction_224	Ca binding to camR.CaMKII site B	species_34 + species_1 \longrightarrow species_36	0000177
226	reaction_225	Ca binding to camR.CaMKII site C	species_34 + species_1 \longrightarrow species_37	0000177
227	reaction_226	Ca binding to camR.CaMKII site D	species_34 + species_1 \longrightarrow species_38	0000177
228	reaction_227	Ca dissociation from camR.ca1_CaMKII site A	species_35 \longrightarrow species_34 + species_1	0000180
229	reaction_228	Ca dissociation from camR.ca1_CaMKII site C	species_37 \longrightarrow species_34 + species_1	0000180
230	reaction_229	Ca dissociation from camR.ca1_CaMKII site D	species_38 \longrightarrow species_34 + species_1	0000180
231	reaction_230	Ca binding to camR.ca1_A.CaMKII site B	species_35 + species_1 \longrightarrow species_39	0000177
232	reaction_231	Ca binding to camR.ca1_A.CaMKII site C	species_35 + species_1 \longrightarrow species_40	0000177
233	reaction_232	Ca binding to camR.ca1_A.CaMKII site D	species_35 + species_1 \longrightarrow species_41	0000177
234	reaction_233	Ca binding to camR.ca1_B.CaMKII site A	species_36 + species_1 \longrightarrow species_39	0000177
235	reaction_234	Ca binding to camR.ca1_B.CaMKII site C	species_36 + species_1 \longrightarrow species_42	0000177
236	reaction_235	Ca binding to camR.ca1_B.CaMKII site D	species_36 + species_1 \longrightarrow species_43	0000177
237	reaction_236	Ca binding to camR.ca1_C.CaMKII site A	species_37 + species_1 \longrightarrow species_40	0000177
238	reaction_237	Ca binding to camR.ca1_C.CaMKII site B	species_37 + species_1 \longrightarrow species_42	0000177
239	reaction_238	Ca binding to camR.ca1_C.CaMKII site D	species_37 + species_1 \longrightarrow species_44	0000177
240	reaction_239	Ca binding to camR.ca1_D.CaMKII site A	species_38 + species_1 \longrightarrow species_41	0000177
241	reaction_240	Ca binding to camR.ca1_D.CaMKII site B	species_38 + species_1 \longrightarrow species_43	0000177

Nº	Id	Name	Reaction Equation	SBO
242	reaction_241	Ca binding to camR_ca1_D_CaMKII site C	species_38 + species_1 \longrightarrow species_44	0000177
243	reaction_242	Ca dissociation from camR_ca2_AB_CaMKII site A	species_39 \longrightarrow species_36 + species_1	0000180
244	reaction_243	Ca dissociation from camR_ca2_AB_CaMKII site B	species_39 \longrightarrow species_35 + species_1	0000180
245	reaction_244	Ca dissociation from camR_ca2_AC_CaMKII site A	species_40 \longrightarrow species_37 + species_1	0000180
246	reaction_245	Ca dissociation from camR_ca2_AC_CaMKII site C	species_40 \longrightarrow species_35 + species_1	0000180
247	reaction_246	Ca dissociation from camR_ca2_AD_CaMKII site A	species_41 \longrightarrow species_38 + species_1	0000180
248	reaction_247	Ca dissociation from camR_ca2_AD_CaMKII site D	species_41 \longrightarrow species_35 + species_1	0000180
249	reaction_248	Ca dissociation from camR_ca2_BC_CaMKII site B	species_42 \longrightarrow species_37 + species_1	0000180
250	reaction_249	Ca dissociation from camR_ca2_BC_CaMKII site C	species_42 \longrightarrow species_36 + species_1	0000180
251	reaction_250	Ca dissociation from camR_ca2_BD_CaMKII site B	species_43 \longrightarrow species_38 + species_1	0000180
252	reaction_251	Ca dissociation from camR_ca2_BD_CaMKII site D	species_43 \longrightarrow species_36 + species_1	0000180
253	reaction_252	Ca dissociation from camR_ca2_CD_CaMKII site C	species_44 \longrightarrow species_38 + species_1	0000180
254	reaction_253	Ca dissociation from camR_ca2_CD_CaMKII site D	species_44 \longrightarrow species_37 + species_1	0000180
255	reaction_254	Ca binding to camR_ca2_AB_CaMKII site C	species_39 + species_1 \longrightarrow species_45	0000177
256	reaction_255	Ca binding to camR_ca2_AB_CaMKII site D	species_39 + species_1 \longrightarrow species_46	0000177
257	reaction_256	Ca binding to camR_ca2_AC_CaMKII site B	species_40 + species_1 \longrightarrow species_45	0000177
258	reaction_257	Ca binding to camR_ca2_AC_CaMKII site D	species_40 + species_1 \longrightarrow species_47	0000177

Nº	Id	Name	Reaction Equation	SBO
259	reaction_258	Ca binding to camR_ca2_AD.CaMKII site B	species_41 + species_1 \longrightarrow species_46	0000177
260	reaction_259	Ca binding to camR_ca2_AD.CaMKII site C	species_41 + species_1 \longrightarrow species_47	0000177
261	reaction_260	Ca binding to camR_ca2_BC.CaMKII site A	species_42 + species_1 \longrightarrow species_45	0000177
262	reaction_261	Ca binding to camR_ca2_BC.CaMKII site D	species_42 + species_1 \longrightarrow species_48	0000177
263	reaction_262	Ca binding to camR_ca2_BD.CaMKII site A	species_43 + species_1 \longrightarrow species_46	0000177
264	reaction_263	Ca binding to camR_ca2_BD.CaMKII site C	species_43 + species_1 \longrightarrow species_48	0000177
265	reaction_264	Ca binding to camR_ca2_CD.CaMKII site A	species_44 + species_1 \longrightarrow species_47	0000177
266	reaction_265	Ca binding to camR_ca2_CD.CaMKII site B	species_44 + species_1 \longrightarrow species_48	0000177
267	reaction_266	Ca dissociation from camR_ca3_ABC- _CaMKII site C	species_45 \longrightarrow species_39 + species_1	0000180
268	reaction_267	Ca dissociation from camR_ca3_ABC- _CaMKII site B	species_45 \longrightarrow species_40 + species_1	0000180
269	reaction_268	Ca dissociation from camR_ca3_ABC- _CaMKII site A	species_45 \longrightarrow species_42 + species_1	0000180
270	reaction_269	Ca dissociation from camR_ca3_ABD- _CaMKII site D	species_46 \longrightarrow species_39 + species_1	0000180
271	reaction_270	Ca dissociation from camR_ca3_ABD- _CaMKII site B	species_46 \longrightarrow species_41 + species_1	0000180
272	reaction_271	Ca dissociation from camR_ca3_ABD- _CaMKII site A	species_46 \longrightarrow species_43 + species_1	0000180
273	reaction_272	Ca dissociation from camR_ca3_ACD- _CaMKII site D	species_47 \longrightarrow species_40 + species_1	0000180
274	reaction_273	Ca dissociation from camR_ca3_ACD- _CaMKII site C	species_47 \longrightarrow species_41 + species_1	0000180
275	reaction_274	Ca dissociation from camR_ca3_ACD- _CaMKII site A	species_47 \longrightarrow species_44 + species_1	0000180
276	reaction_275	Ca dissociation from camR_ca3_BCD- _CaMKII site D	species_48 \longrightarrow species_42 + species_1	0000180

Nº	Id	Name	Reaction Equation	SBO
277	reaction_276	Ca dissociation from camR_ca3_BCD-CaMKII site C	$\text{species_48} \longrightarrow \text{species_43} + \text{species_1}$	0000180
278	reaction_277	Ca dissociation from camR_ca3_BCD-CaMKII site B	$\text{species_48} \longrightarrow \text{species_44} + \text{species_1}$	0000180
279	reaction_278	Ca binding to camR_ca3_BCD-CaMKII site A	$\text{species_48} + \text{species_1} \longrightarrow \text{species_49}$	0000177
280	reaction_279	Ca binding to camR_ca3_ACD-CaMKII site B	$\text{species_47} + \text{species_1} \longrightarrow \text{species_49}$	0000177
281	reaction_280	Ca binding to camR_ca3_ABD-CaMKII site C	$\text{species_46} + \text{species_1} \longrightarrow \text{species_49}$	0000177
282	reaction_281	Ca binding to camR_ca3_ABC-CaMKII site D	$\text{species_45} + \text{species_1} \longrightarrow \text{species_49}$	0000177
283	reaction_282	Ca dissociation from camR_ca4_ABCD-CaMKII site A	$\text{species_49} \longrightarrow \text{species_48} + \text{species_1}$	0000180
284	reaction_283	Ca dissociation from camR_ca4_ABCD-CaMKII site B	$\text{species_49} \longrightarrow \text{species_47} + \text{species_1}$	0000180
285	reaction_284	Ca dissociation from camR_ca4_ABCD-CaMKII site C	$\text{species_49} \longrightarrow \text{species_46} + \text{species_1}$	0000180
286	reaction_285	Ca dissociation from camR_ca4_ABCD-CaMKII site D	$\text{species_49} \longrightarrow \text{species_45} + \text{species_1}$	0000180
287	reaction_286	Ca binding to camR_PP2B site A	$\text{species_51} + \text{species_1} \longrightarrow \text{species_52}$	0000177
288	reaction_287	Ca binding to camR_PP2B site B	$\text{species_51} + \text{species_1} \longrightarrow \text{species_53}$	0000177
289	reaction_288	Ca binding to camR_PP2B site C	$\text{species_51} + \text{species_1} \longrightarrow \text{species_54}$	0000177
290	reaction_289	Ca binding to camR_PP2B site D	$\text{species_51} + \text{species_1} \longrightarrow \text{species_55}$	0000177
291	reaction_290	Ca dissociation from camR_ca1_A_PP2B site A	$\text{species_52} \longrightarrow \text{species_51} + \text{species_1}$	0000180
292	reaction_291	Ca dissociation from camR_ca1_B_PP2B site B	$\text{species_53} \longrightarrow \text{species_51} + \text{species_1}$	0000180

Nº	Id	Name	Reaction Equation	SBO
293	reaction_292	Ca dissociation from camR_ca1_C_PP2B site C	species_54 \longrightarrow species_51 + species_1	0000180
294	reaction_293	Ca dissociation from camR_ca1_D_PP2B site D	species_55 \longrightarrow species_51 + species_1	0000180
295	reaction_294	Ca binding to camR_ca1_A_PP2B site B	species_52 + species_1 \longrightarrow species_56	0000177
296	reaction_295	Ca binding to camR_ca1_A_PP2B site C	species_52 + species_1 \longrightarrow species_57	0000177
297	reaction_296	Ca binding to camR_ca1_A_PP2B site D	species_52 + species_1 \longrightarrow species_58	0000177
298	reaction_297	Ca binding to camR_ca1_B_PP2B site A	species_53 + species_1 \longrightarrow species_56	0000177
299	reaction_298	Ca binding to camR_ca1_B_PP2B site C	species_53 + species_1 \longrightarrow species_59	0000177
300	reaction_299	Ca binding to camR_ca1_B_PP2B site D	species_53 + species_1 \longrightarrow species_60	0000177
301	reaction_300	Ca binding to camR_ca1_C_PP2B site A	species_54 + species_1 \longrightarrow species_57	0000177
302	reaction_301	Ca binding to camR_ca1_C_PP2B site B	species_54 + species_1 \longrightarrow species_59	0000177
303	reaction_302	Ca binding to camR_ca1_C_PP2B site D	species_54 + species_1 \longrightarrow species_61	0000177
304	reaction_303	Ca binding to camR_ca1_D_PP2B site A	species_55 + species_1 \longrightarrow species_58	0000177
305	reaction_304	Ca binding to camR_ca1_D_PP2B site B	species_55 + species_1 \longrightarrow species_60	0000177
306	reaction_305	Ca binding to camR_ca1_D_PP2B site C	species_55 + species_1 \longrightarrow species_61	0000177
307	reaction_306	Ca dissociating from camR_ca2_AB_PP2B site A	species_56 \longrightarrow species_53 + species_1	0000180
308	reaction_307	Ca dissociating from camR_ca2_AB_PP2B site B	species_56 \longrightarrow species_52 + species_1	0000180
309	reaction_308	Ca dissociating from camR_ca2_AC_PP2B site A	species_57 \longrightarrow species_54 + species_1	0000180
310	reaction_309	Ca dissociating from camR_ca2_AC_PP2B site C	species_57 \longrightarrow species_52 + species_1	0000180
311	reaction_310	Ca dissociating from camR_ca2_AD_PP2B site A	species_58 \longrightarrow species_55 + species_1	0000180
312	reaction_311	Ca dissociating from camR_ca2_AD_PP2B site D	species_58 \longrightarrow species_52 + species_1	0000180

Nº	Id	Name	Reaction Equation	SBO
313	reaction_312	Ca dissociating from camR_ca2_BC_PP2B site B	species_59 \longrightarrow species_54 + species_1	0000180
314	reaction_313	Ca dissociating from camR_ca2_BC_PP2B site C	species_59 \longrightarrow species_53 + species_1	0000180
315	reaction_314	Ca dissociating from camR_ca2_BD_PP2B site B	species_60 \longrightarrow species_55 + species_1	0000180
316	reaction_315	Ca dissociating from camR_ca2_BD_PP2B site D	species_60 \longrightarrow species_53 + species_1	0000180
317	reaction_316	Ca dissociating from camR_ca2_CD_PP2B site C	species_61 \longrightarrow species_55 + species_1	0000180
318	reaction_317	Ca dissociating from camR_ca2_CD_PP2B site D	species_61 \longrightarrow species_54 + species_1	0000180
319	reaction_318	Ca binding to camR_ca2_AB_PP2B site C	species_56 + species_1 \longrightarrow species_62	0000177
320	reaction_319	Ca binding to camR_ca2_AB_PP2B site D	species_56 + species_1 \longrightarrow species_63	0000177
321	reaction_320	Ca binding to camR_ca2_AC_PP2B site B	species_57 + species_1 \longrightarrow species_62	0000177
322	reaction_321	Ca binding to camR_ca2_AC_PP2B site D	species_57 + species_1 \longrightarrow species_64	0000177
323	reaction_322	Ca binding to camR_ca2_AD_PP2B site B	species_58 + species_1 \longrightarrow species_63	0000177
324	reaction_323	Ca binding to camR_ca2_AD_PP2B site C	species_58 + species_1 \longrightarrow species_64	0000177
325	reaction_324	Ca binding to camR_ca2_BC_PP2B site A	species_59 + species_1 \longrightarrow species_62	0000177
326	reaction_325	Ca binding to camR_ca2_BC_PP2B site D	species_59 + species_1 \longrightarrow species_65	0000177
327	reaction_326	Ca binding to camR_ca2_BD_PP2B site A	species_60 + species_1 \longrightarrow species_63	0000177
328	reaction_327	Ca binding to camR_ca2_BD_PP2B site C	species_60 + species_1 \longrightarrow species_65	0000177
329	reaction_328	Ca binding to camR_ca2_CD_PP2B site A	species_61 + species_1 \longrightarrow species_64	0000177
330	reaction_329	Ca binding to camR_ca2_CD_PP2B site B	species_61 + species_1 \longrightarrow species_65	0000177
331	reaction_330	Ca dissociation from camR_ca3_ABC_PP2B site A	species_62 \longrightarrow species_59 + species_1	0000180
332	reaction_331	Ca dissociation from camR_ca3_ABC_PP2B site B	species_62 \longrightarrow species_57 + species_1	0000180

Nº	Id	Name	Reaction Equation	SBO
333	reaction_332	Ca dissociation from camR_ca3_ABC_PP2B site C	species_62 \longrightarrow species_56 + species_1	0000180
334	reaction_333	Ca dissociation from camR_ca3_ABD_PP2B site A	species_63 \longrightarrow species_60 + species_1	0000180
335	reaction_334	Ca dissociation from camR_ca3_ABD_PP2B site B	species_63 \longrightarrow species_58 + species_1	0000180
336	reaction_335	Ca dissociation from camR_ca3_ABD_PP2B site D	species_63 \longrightarrow species_56 + species_1	0000180
337	reaction_336	Ca dissociation from camR_ca3_ACD_PP2B site A	species_64 \longrightarrow species_61 + species_1	0000180
338	reaction_337	Ca dissociation from camR_ca3_ACD_PP2B site C	species_64 \longrightarrow species_58 + species_1	0000180
339	reaction_338	Ca dissociation from camR_ca3_ACD_PP2B site D	species_64 \longrightarrow species_57 + species_1	0000180
340	reaction_339	Ca dissociation from camR_ca3_BCD_PP2B site B	species_65 \longrightarrow species_61 + species_1	0000180
341	reaction_340	Ca dissociation from camR_ca3_BCD_PP2B site C	species_65 \longrightarrow species_60 + species_1	0000180
342	reaction_341	Ca dissociation from camR_ca3_BCD_PP2B site D	species_65 \longrightarrow species_59 + species_1	0000180
343	reaction_342	Ca binding to camR_ca3_ABC_PP2B site D	species_62 + species_1 \longrightarrow species_66	0000177
344	reaction_343	Ca binding to camR_ca3_ABD_PP2B site C	species_63 + species_1 \longrightarrow species_66	0000177
345	reaction_344	Ca binding to camR_ca3_ACD_PP2B site B	species_64 + species_1 \longrightarrow species_66	0000177
346	reaction_345	Ca binding to camR_ca3_BCD_PP2B site A	species_65 + species_1 \longrightarrow species_66	0000177
347	reaction_346	Ca dissociating from camR_ca4_ABCD_PP2B site A	species_66 \longrightarrow species_65 + species_1	0000180
348	reaction_347	Ca dissociating from camR_ca4_ABCD_PP2B site B	species_66 \longrightarrow species_64 + species_1	0000180

Nº	Id	Name	Reaction Equation	SBO
349	reaction_348	Ca dissociating from camR_ca4_ABCD-PP2B site C	species_66 \longrightarrow species_63 + species_1	0000180
350	reaction_349	Ca dissociating from camR_ca4_ABCD-PP2B site D	species_66 \longrightarrow species_62 + species_1	0000180
351	reaction_350	Ca dissociation from camR_ca1_CaMKII site B	species_36 \longrightarrow species_34 + species_1	0000180
352	reaction_351	Ca dissociating from camT_ca3_ABC site C	species_28 \longrightarrow species_22 + species_1	0000180

8.1 Reaction `reaction_0`

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

Name Ca binding to camR site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 6: Properties of each reactant.

Id	Name	SBO
species_0	camR	
species_1	ca	

Product

Table 7: Properties of each product.

Id	Name	SBO
species_2	camR_cal_A	

Kinetic Law

Derived unit contains undeclared units

$$v_1 = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_0}] \cdot [\text{species_1}] \quad (75)$$

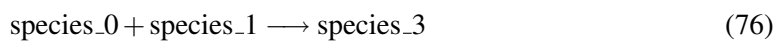
8.2 Reaction `reaction_1`

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

Name Ca binding to camR site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 8: Properties of each reactant.

Id	Name	SBO
species_0	camR	
species_1	ca	

Product

Table 9: Properties of each product.

Id	Name	SBO
species_3	camR_cal_B	

Kinetic Law

Derived unit contains undeclared units

$$v_2 = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_0] \cdot [\text{species}_1] \quad (77)$$

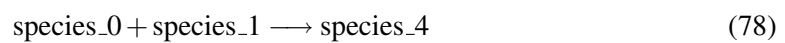
8.3 Reaction `reaction_2`

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

Name Ca binding to camR site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 10: Properties of each reactant.

Id	Name	SBO
species_0	camR	
species_1	ca	

Product

Table 11: Properties of each product.

Id	Name	SBO
species_4	camR_cal_C	

Kinetic Law**Derived unit** contains undeclared units

$$v_3 = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_0] \cdot [\text{species}_1] \quad (79)$$

8.4 Reaction `reaction_3`

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

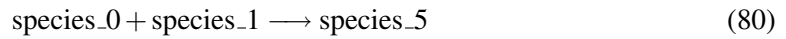
Name Ca binding to camR site D**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 12: Properties of each reactant.

Id	Name	SBO
species_0	camR	
species_1	ca	

Product

Table 13: Properties of each product.

Id	Name	SBO
species_5	camR_cal_D	

Kinetic Law**Derived unit** contains undeclared units

$$v_4 = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_0] \cdot [\text{species}_1] \quad (81)$$

8.5 Reaction `reaction_4`

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

Name Ca dissociating from camR_cal_A site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 14: Properties of each reactant.

Id	Name	SBO
species_2	camR_cal_A	

Products

Table 15: Properties of each product.

Id	Name	SBO
species_0	camR	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_5 = \text{vol}(\text{compartment_0}) \cdot \text{parameter_1} \cdot [\text{species_2}] \quad (83)$$

8.6 Reaction `reaction_5`

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

Name Ca dissociating from camR_cal_B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 16: Properties of each reactant.

Id	Name	SBO
species_3	camR_cal_B	

Products

Table 17: Properties of each product.

Id	Name	SBO
species_0	camR	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_6 = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_3] \quad (85)$$

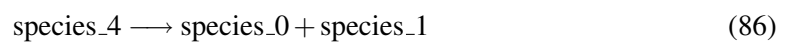
8.7 Reaction `reaction_6`

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

Name Ca dissociating from camR_cal_C site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 18: Properties of each reactant.

Id	Name	SBO
species_4	camR_cal_C	

Products

Table 19: Properties of each product.

Id	Name	SBO
species_0	camR	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_7 = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_4] \quad (87)$$

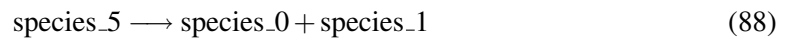
8.8 Reaction `reaction_7`

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

Name Ca dissociating from camR_ca1_D site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 20: Properties of each reactant.

Id	Name	SBO
species_5	camR_ca1_D	

Products

Table 21: Properties of each product.

Id	Name	SBO
species_0	camR	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_8 = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_5] \quad (89)$$

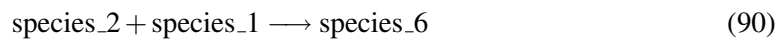
8.9 Reaction `reaction_8`

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

Name Ca binding to camR_cal_A site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 22: Properties of each reactant.

Id	Name	SBO
<code>species_2</code>	camR_cal_A	
<code>species_1</code>	ca	

Product

Table 23: Properties of each product.

Id	Name	SBO
<code>species_6</code>	camR_ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_9 = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_2] \cdot [\text{species}_1] \quad (91)$$

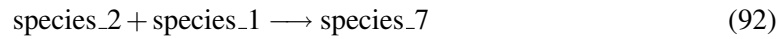
8.10 Reaction `reaction_9`

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

Name Ca binding to camR_cal_A site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 24: Properties of each reactant.

Id	Name	SBO
species_2	camR_cal_A	
species_1	ca	

Product

Table 25: Properties of each product.

Id	Name	SBO
species_7	camR_cal2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{10} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_2}] \cdot [\text{species_1}] \quad (93)$$

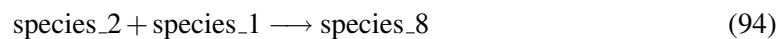
8.11 Reaction `reaction_10`

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

Name Ca binding to camR_cal_A site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 26: Properties of each reactant.

Id	Name	SBO
species_2	camR_cal_A	
species_1	ca	

Product

Table 27: Properties of each product.

Id	Name	SBO
species_8	camR_ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{11} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_2] \cdot [\text{species}_1] \quad (95)$$

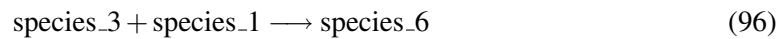
8.12 Reaction [reaction_11](#)

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

Name Ca binding to camR_ca1_B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 28: Properties of each reactant.

Id	Name	SBO
species_3	camR_ca1_B	
species_1	ca	

Product

Table 29: Properties of each product.

Id	Name	SBO
species_6	camR_ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{12} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_3] \cdot [\text{species}_1] \quad (97)$$

8.13 Reaction `reaction_12`

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

Name Ca binding to camR_cal_B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 30: Properties of each reactant.

Id	Name	SBO
<code>species_3</code>	camR_cal_B	
<code>species_1</code>	ca	

Product

Table 31: Properties of each product.

Id	Name	SBO
<code>species_9</code>	camR_ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{13} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_3] \cdot [\text{species}_1] \quad (99)$$

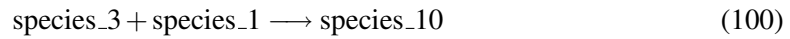
8.14 Reaction `reaction_13`

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

Name Ca binding to camR_cal_B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 32: Properties of each reactant.

Id	Name	SBO
species_3	camR_ca1_B	
species_1	ca	

Product

Table 33: Properties of each product.

Id	Name	SBO
species_10	camR_ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{14} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_3}] \cdot [\text{species_1}] \quad (101)$$

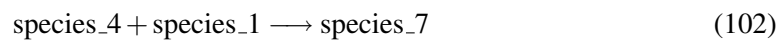
8.15 Reaction `reaction_14`

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

Name Ca binding to camR_ca1_C site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 34: Properties of each reactant.

Id	Name	SBO
species_4	camR_ca1_C	
species_1	ca	

Product

Table 35: Properties of each product.

Id	Name	SBO
species_7	camR_ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{15} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_4] \cdot [\text{species}_1] \quad (103)$$

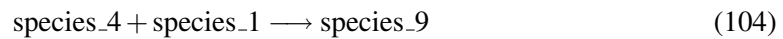
8.16 Reaction [reaction_15](#)

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

Name Ca binding to camR_ca1_C site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 36: Properties of each reactant.

Id	Name	SBO
species_4	camR_ca1_C	
species_1	ca	

Product

Table 37: Properties of each product.

Id	Name	SBO
species_9	camR_ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{16} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_4] \cdot [\text{species}_1] \quad (105)$$

8.17 Reaction `reaction_16`

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

Name Ca binding to camR_cal_C site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 38: Properties of each reactant.

Id	Name	SBO
<code>species_4</code>	camR_cal_C	
<code>species_1</code>	ca	

Product

Table 39: Properties of each product.

Id	Name	SBO
<code>species_{11}</code>	camR_ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{17} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_4] \cdot [\text{species}_1] \quad (107)$$

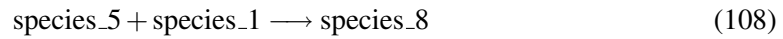
8.18 Reaction `reaction_17`

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

Name Ca binding to camR_cal_D site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 40: Properties of each reactant.

Id	Name	SBO
species_5	camR_ca1_D	
species_1	ca	

Product

Table 41: Properties of each product.

Id	Name	SBO
species_8	camR_ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{18} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_5}] \cdot [\text{species_1}] \quad (109)$$

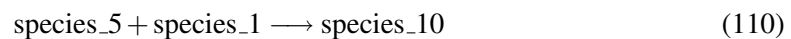
8.19 Reaction `reaction_18`

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

Name Ca binding to camR_ca1_D site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 42: Properties of each reactant.

Id	Name	SBO
species_5	camR_ca1_D	
species_1	ca	

Product

Table 43: Properties of each product.

Id	Name	SBO
species_10	camR_ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{19} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_5] \cdot [\text{species}_1] \quad (111)$$

8.20 Reaction [reaction_19](#)

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

Name Ca binding to camR_ca1_D site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 44: Properties of each reactant.

Id	Name	SBO
species_5	camR_ca1_D	
species_1	ca	

Product

Table 45: Properties of each product.

Id	Name	SBO
species_11	camR_ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{20} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_5] \cdot [\text{species}_1] \quad (113)$$

8.21 Reaction `reaction_20`

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

Name Ca dissociating from camR_ca2_AB site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 46: Properties of each reactant.

Id	Name	SBO
<code>species_6</code>	camR_ca2_AB	

Products

Table 47: Properties of each product.

Id	Name	SBO
<code>species_2</code>	camR_ca1_A	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{21} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_6] \quad (115)$$

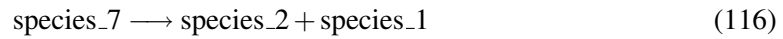
8.22 Reaction `reaction_21`

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

Name Ca dissociating from camR_ca2_AC site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 48: Properties of each reactant.

Id	Name	SBO
species_7	camR_ca2_AC	

Products

Table 49: Properties of each product.

Id	Name	SBO
species_2	camR_ca1_A	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{22} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_3} \cdot [\text{species_7}] \quad (117)$$

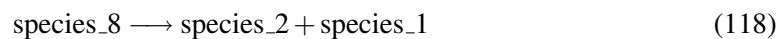
8.23 Reaction `reaction_22`

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

Name Ca dissociating from camR_ca2_AD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 50: Properties of each reactant.

Id	Name	SBO
species_8	camR_ca2_AD	

Products

Table 51: Properties of each product.

Id	Name	SBO
species_2	camR_ca1_A	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{23} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_8] \quad (119)$$

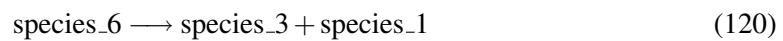
8.24 Reaction [reaction_23](#)

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

Name Ca dissociating from camR_ca2_AB site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 52: Properties of each reactant.

Id	Name	SBO
species_6	camR_ca2_AB	

Products

Table 53: Properties of each product.

Id	Name	SBO
species_3	camR_ca1_B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{24} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_6] \quad (121)$$

8.25 Reaction `reaction_24`

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

Name Ca dissociating from camR_ca2_BC site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 54: Properties of each reactant.

Id	Name	SBO
<code>species_9</code>	camR_ca2_BC	

Products

Table 55: Properties of each product.

Id	Name	SBO
<code>species_3</code>	camR_ca1_B	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{25} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_9] \quad (123)$$

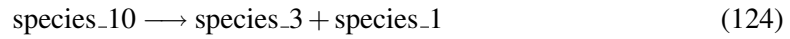
8.26 Reaction `reaction_25`

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

Name Ca dissociating from camR_ca2_BD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 56: Properties of each reactant.

Id	Name	SBO
species_10	camR_ca2_BD	

Products

Table 57: Properties of each product.

Id	Name	SBO
species_3	camR_ca1_B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{26} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_4} \cdot [\text{species_10}] \quad (125)$$

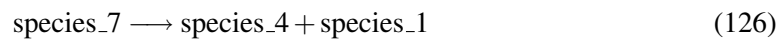
8.27 Reaction [reaction_26](#)

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

Name Ca dissociating from camR_ca2_AC site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 58: Properties of each reactant.

Id	Name	SBO
species_7	camR_ca2_AC	

Products

Table 59: Properties of each product.

Id	Name	SBO
species_4	camR_ca1_C	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{27} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_7] \quad (127)$$

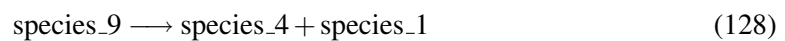
8.28 Reaction [reaction_27](#)

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

Name Ca dissociating from camR_ca2_BC site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 60: Properties of each reactant.

Id	Name	SBO
species_9	camR_ca2_BC	

Products

Table 61: Properties of each product.

Id	Name	SBO
species_4	camR_ca1_C	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{28} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_9] \quad (129)$$

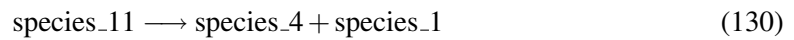
8.29 Reaction `reaction_28`

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

Name Ca dissociating from camR_ca2_CD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 62: Properties of each reactant.

Id	Name	SBO
species_11	camR_ca2_CD	

Products

Table 63: Properties of each product.

Id	Name	SBO
species_4	camR_ca1_C	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{29} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{11}] \quad (131)$$

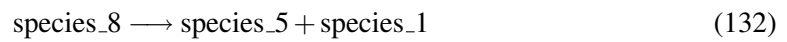
8.30 Reaction `reaction_29`

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

Name Ca dissociating from camR_ca2_AD site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 64: Properties of each reactant.

Id	Name	SBO
<code>species_8</code>	camR_ca2_AD	

Products

Table 65: Properties of each product.

Id	Name	SBO
<code>species_5</code>	camR_ca1_D	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{30} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_8] \quad (133)$$

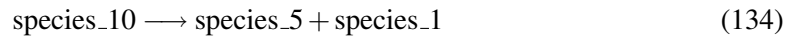
8.31 Reaction `reaction_30`

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

Name Ca dissociating from camR_ca2_BD site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 66: Properties of each reactant.

Id	Name	SBO
species_10	camR_ca2_BD	

Products

Table 67: Properties of each product.

Id	Name	SBO
species_5	camR_ca1_D	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{31} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_2} \cdot [\text{species_10}] \quad (135)$$

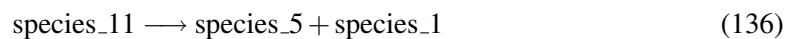
8.32 Reaction [reaction_31](#)

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

Name Ca dissociating from camR_ca2_CD site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 68: Properties of each reactant.

Id	Name	SBO
species_11	camR_ca2_CD	

Products

Table 69: Properties of each product.

Id	Name	SBO
species_5	camR_ca1_D	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{32} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{11}] \quad (137)$$

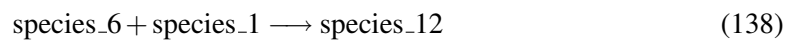
8.33 Reaction [reaction_32](#)

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

Name Ca binding to camR_ca2_AB site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 70: Properties of each reactant.

Id	Name	SBO
species_6	camR_ca2_AB	
species_1	ca	

Product

Table 71: Properties of each product.

Id	Name	SBO
species_12	camR_ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{33} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_6}] \cdot [\text{species_1}] \quad (139)$$

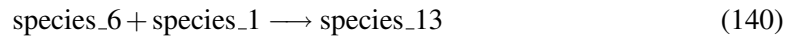
8.34 Reaction `reaction_33`

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

Name Ca binding to camR_ca2_AB site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 72: Properties of each reactant.

Id	Name	SBO
<code>species_6</code>	camR_ca2_AB	
<code>species_1</code>	ca	

Product

Table 73: Properties of each product.

Id	Name	SBO
<code>species_13</code>	camR_ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{34} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_6}] \cdot [\text{species_1}] \quad (141)$$

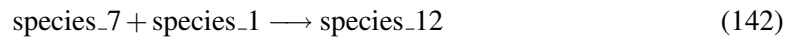
8.35 Reaction `reaction_34`

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

Name Ca binding to camR_ca2_AC site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 74: Properties of each reactant.

Id	Name	SBO
species_7	camR_ca2_AC	
species_1	ca	

Product

Table 75: Properties of each product.

Id	Name	SBO
species_12	camR_ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{35} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_7}] \cdot [\text{species_1}] \quad (143)$$

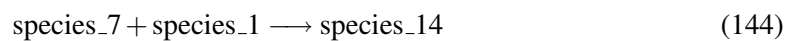
8.36 Reaction `reaction_35`

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

Name Ca binding to camR_ca2_AC site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 76: Properties of each reactant.

Id	Name	SBO
species_7	camR_ca2_AC	
species_1	ca	

Product

Table 77: Properties of each product.

Id	Name	SBO
species_14	camR_ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{36} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_7] \cdot [\text{species}_1] \quad (145)$$

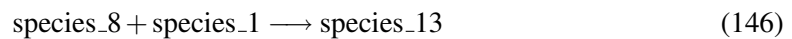
8.37 Reaction [reaction_36](#)

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

Name Ca binding to camR_ca2_AD site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 78: Properties of each reactant.

Id	Name	SBO
species_8	camR_ca2_AD	
species_1	ca	

Product

Table 79: Properties of each product.

Id	Name	SBO
species_13	camR_ca3_ABD	

Kinetic Law**Derived unit** contains undeclared units

$$v_{37} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_8] \cdot [\text{species}_1] \quad (147)$$

8.38 Reaction [reaction_37](#)

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

Name Ca binding to camR_ca2_AD site C**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 80: Properties of each reactant.

Id	Name	SBO
species_8	camR_ca2_AD	
species_1	ca	

Product

Table 81: Properties of each product.

Id	Name	SBO
species_14	camR_ca3_ACD	

Kinetic Law**Derived unit** contains undeclared units

$$v_{38} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_8] \cdot [\text{species}_1] \quad (149)$$

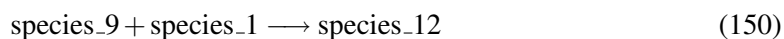
8.39 Reaction `reaction_38`

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

Name Ca binding to camR_ca2_BC site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 82: Properties of each reactant.

Id	Name	SBO
species_9	camR_ca2_BC	
species_1	ca	

Product

Table 83: Properties of each product.

Id	Name	SBO
species_12	camR_ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{39} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_9}] \cdot [\text{species_1}] \quad (151)$$

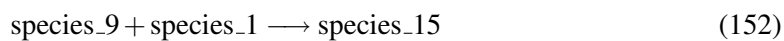
8.40 Reaction `reaction_39`

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

Name Ca binding to camR_ca2_BC site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 84: Properties of each reactant.

Id	Name	SBO
species_9	camR_ca2_BC	
species_1	ca	

Product

Table 85: Properties of each product.

Id	Name	SBO
species_15	camR_ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{40} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_9] \cdot [\text{species}_1] \quad (153)$$

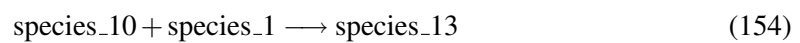
8.41 Reaction [reaction_40](#)

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

Name Ca binding to camR_ca2_BD site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 86: Properties of each reactant.

Id	Name	SBO
species_10	camR_ca2_BD	
species_1	ca	

Product

Table 87: Properties of each product.

Id	Name	SBO
species_13	camR_ca3_ABD	

Kinetic Law**Derived unit** contains undeclared units

$$v_{41} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{10}] \cdot [\text{species}_1] \quad (155)$$

8.42 Reaction [reaction_41](#)

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

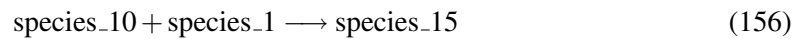
Name Ca binding to camR_ca2_BD site C**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 88: Properties of each reactant.

Id	Name	SBO
species_10	camR_ca2_BD	
species_1	ca	

Product

Table 89: Properties of each product.

Id	Name	SBO
species_15	camR_ca3_BCD	

Kinetic Law**Derived unit** contains undeclared units

$$v_{42} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{10}] \cdot [\text{species}_1] \quad (157)$$

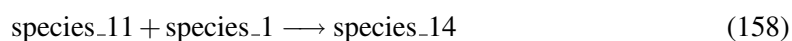
8.43 Reaction `reaction_42`

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

Name Ca binding to camR_ca2_CD site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 90: Properties of each reactant.

Id	Name	SBO
species_11	camR_ca2_CD	
species_1	ca	

Product

Table 91: Properties of each product.

Id	Name	SBO
species_14	camR_ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{43} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_11}] \cdot [\text{species_1}] \quad (159)$$

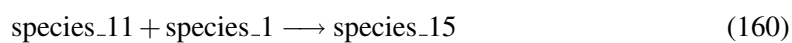
8.44 Reaction `reaction_43`

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

Name Ca binding to camR_ca2_CD site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 92: Properties of each reactant.

Id	Name	SBO
species_11	camR_ca2_CD	
species_1	ca	

Product

Table 93: Properties of each product.

Id	Name	SBO
species_15	camR_ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{44} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{11}] \cdot [\text{species}_1] \quad (161)$$

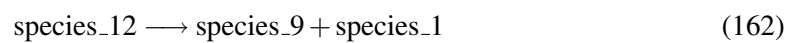
8.45 Reaction [reaction_44](#)

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

Name Ca dissociating from camR_ca3_ABC site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 94: Properties of each reactant.

Id	Name	SBO
species_12	camR_ca3_ABC	

Products

Table 95: Properties of each product.

Id	Name	SBO
species_9	camR_ca2_BC	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{45} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{12}] \quad (163)$$

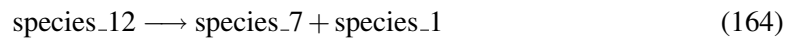
8.46 Reaction `reaction_45`

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

Name Ca dissociating from camR_ca3_ABC site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 96: Properties of each reactant.

Id	Name	SBO
species_12	camR_ca3_ABC	

Products

Table 97: Properties of each product.

Id	Name	SBO
species_7	camR_ca2_AC	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{46} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{12}] \quad (165)$$

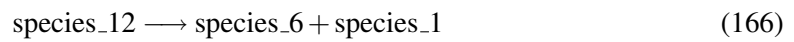
8.47 Reaction `reaction_46`

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

Name Ca dissociating from camR_ca3_ABC site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 98: Properties of each reactant.

Id	Name	SBO
<code>species_{12}</code>	camR_ca3_ABC	

Products

Table 99: Properties of each product.

Id	Name	SBO
<code>species_6</code>	camR_ca2_AB	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{47} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{12}] \quad (167)$$

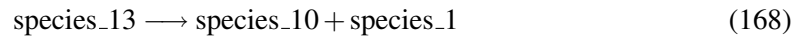
8.48 Reaction `reaction_47`

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

Name Ca dissociating from camR_ca3_ABD site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 100: Properties of each reactant.

Id	Name	SBO
species_13	camR_ca3_ABD	

Products

Table 101: Properties of each product.

Id	Name	SBO
species_10	camR_ca2_BD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{48} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_1} \cdot [\text{species_13}] \quad (169)$$

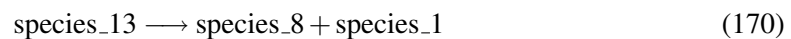
8.49 Reaction [reaction_48](#)

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

Name Ca dissociating from camR_ca3_ABD site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 102: Properties of each reactant.

Id	Name	SBO
species_13	camR_ca3_ABD	

Products

Table 103: Properties of each product.

Id	Name	SBO
species_8	camR_ca2_AD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{49} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{13}] \quad (171)$$

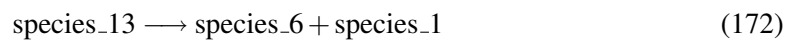
8.50 Reaction [reaction_49](#)

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

Name Ca dissociating from camR_ca3_ABD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 104: Properties of each reactant.

Id	Name	SBO
species_13	camR_ca3_ABD	

Products

Table 105: Properties of each product.

Id	Name	SBO
species_6	camR_ca2_AB	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{50} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{13}] \quad (173)$$

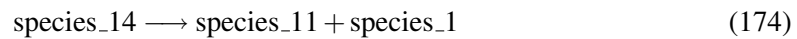
8.51 Reaction `reaction_50`

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

Name Ca dissociating from camR_ca3_ACD site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 106: Properties of each reactant.

Id	Name	SBO
<code>species_14</code>	camR_ca3_ACD	

Products

Table 107: Properties of each product.

Id	Name	SBO
<code>species_11</code>	camR_ca2_CD	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{51} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{14}] \quad (175)$$

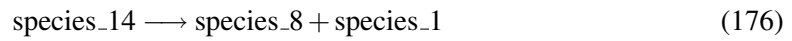
8.52 Reaction `reaction_51`

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

Name Ca dissociating from camR_ca3_ACD site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 108: Properties of each reactant.

Id	Name	SBO
species_14	camR_ca3_ACD	

Products

Table 109: Properties of each product.

Id	Name	SBO
species_8	camR_ca2_AD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{52} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_3} \cdot [\text{species_14}] \quad (177)$$

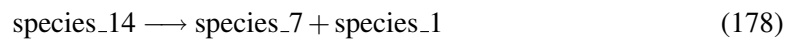
8.53 Reaction [reaction_52](#)

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

Name Ca dissociating from camR_ca3_ACD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 110: Properties of each reactant.

Id	Name	SBO
species_14	camR_ca3_ACD	

Products

Table 111: Properties of each product.

Id	Name	SBO
species_7	camR_ca2_AC	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{53} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{14}] \quad (179)$$

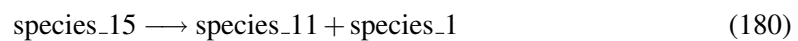
8.54 Reaction [reaction_53](#)

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

Name Ca dissociating from camR_ca3_BCD site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 112: Properties of each reactant.

Id	Name	SBO
species_15	camR_ca3_BCD	

Products

Table 113: Properties of each product.

Id	Name	SBO
species_11	camR_ca2_CD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{54} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{15}] \quad (181)$$

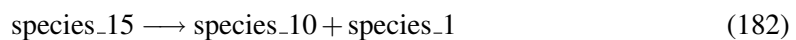
8.55 Reaction [reaction_54](#)

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

Name Ca dissociating from camR_ca3_BCD site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 114: Properties of each reactant.

Id	Name	SBO
species_15	camR_ca3_BCD	

Products

Table 115: Properties of each product.

Id	Name	SBO
species_10	camR_ca2_BD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{55} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{15}] \quad (183)$$

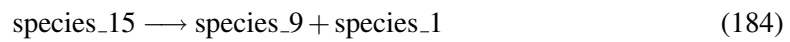
8.56 Reaction `reaction_55`

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

Name Ca dissociating from camR_ca3_BCD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 116: Properties of each reactant.		
Id	Name	SBO
<code>species_15</code>	camR_ca3_BCD	

Products

Table 117: Properties of each product.		
Id	Name	SBO
<code>species_9</code>	camR_ca2_BC	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{56} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{15}] \quad (185)$$

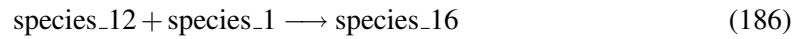
8.57 Reaction `reaction_56`

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

Name Ca binding to camR_ca3_ABC site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 118: Properties of each reactant.

Id	Name	SBO
species_12	camR_ca3_ABC	
species_1	ca	

Product

Table 119: Properties of each product.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{57} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_12}] \cdot [\text{species_1}] \quad (187)$$

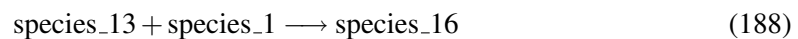
8.58 Reaction [reaction_57](#)

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

Name Ca binding to camR_ca3_ABD site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 120: Properties of each reactant.

Id	Name	SBO
species_13	camR_ca3_ABD	
species_1	ca	

Product

Table 121: Properties of each product.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{58} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{13}] \cdot [\text{species}_1] \quad (189)$$

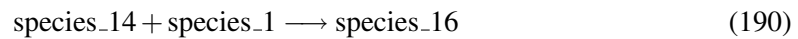
8.59 Reaction [reaction_58](#)

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

Name Ca binding to camR_ca3_ACD site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 122: Properties of each reactant.

Id	Name	SBO
species_14	camR_ca3_ACD	
species_1	ca	

Product

Table 123: Properties of each product.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{59} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{14}] \cdot [\text{species}_1] \quad (191)$$

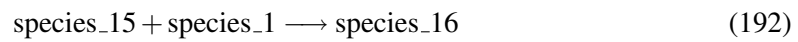
8.60 Reaction `reaction_59`

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

Name Ca binding to camR_ca3_BCD site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 124: Properties of each reactant.

Id	Name	SBO
<code>species_{15}</code>	camR_ca3_BCD	
<code>species_1</code>	ca	

Product

Table 125: Properties of each product.

Id	Name	SBO
<code>species_{16}</code>	camR_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{60} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{15}] \cdot [\text{species}_1] \quad (193)$$

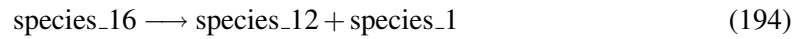
8.61 Reaction `reaction_60`

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

Name Ca dissociating from camR_ca4_ABCD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 126: Properties of each reactant.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Products

Table 127: Properties of each product.

Id	Name	SBO
species_12	camR_ca3_ABC	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{61} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_4} \cdot [\text{species_16}] \quad (195)$$

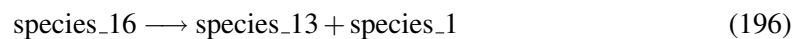
8.62 Reaction [reaction_61](#)

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

Name Ca dissociating from camR_ca4_ABCD site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 128: Properties of each reactant.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Products

Table 129: Properties of each product.

Id	Name	SBO
species_13	camR_ca3_ABD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{62} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{16}] \quad (197)$$

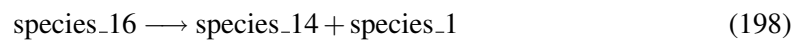
8.63 Reaction [reaction_62](#)

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

Name Ca dissociating from camR_ca4_ABCD site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 130: Properties of each reactant.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Products

Table 131: Properties of each product.

Id	Name	SBO
species_14	camR_ca3_ACD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{63} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{16}] \quad (199)$$

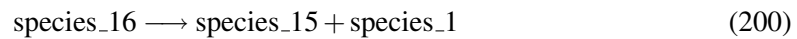
8.64 Reaction [reaction_63](#)

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

Name Ca dissociating from camR_ca4_ABCD site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 132: Properties of each reactant.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Products

Table 133: Properties of each product.

Id	Name	SBO
species_15	camR_ca3_BCD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{64} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{16}] \quad (201)$$

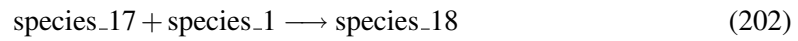
8.65 Reaction [reaction_64](#)

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

Name Ca binding to camT site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 134: Properties of each reactant.

Id	Name	SBO
species_17	camT	
species_1	ca	

Product

Table 135: Properties of each product.

Id	Name	SBO
species_18	camT_cal_A	

Kinetic Law

Derived unit contains undeclared units

$$v_{65} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_17}] \cdot [\text{species_1}] \quad (203)$$

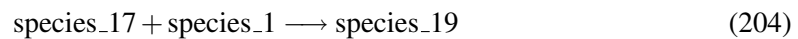
8.66 Reaction [reaction_65](#)

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

Name Ca binding to camT site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 136: Properties of each reactant.

Id	Name	SBO
species_17	camT	
species_1	ca	

Product

Table 137: Properties of each product.

Id	Name	SBO
species_19	camT_cal_B	

Kinetic Law

Derived unit contains undeclared units

$$v_{66} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{17}] \cdot [\text{species}_1] \quad (205)$$

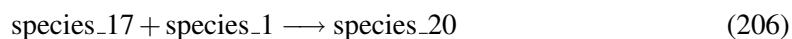
8.67 Reaction `reaction_66`

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

Name Ca binding to camT site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 138: Properties of each reactant.

Id	Name	SBO
species_17	camT	
species_1	ca	

Product

Table 139: Properties of each product.

Id	Name	SBO
species_20	camT_cal_C	

Kinetic Law**Derived unit** contains undeclared units

$$v_{67} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{17}] \cdot [\text{species}_1] \quad (207)$$

8.68 Reaction `reaction_67`

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

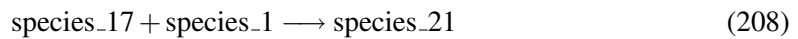
Name Ca binding to camT site D**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 140: Properties of each reactant.

Id	Name	SBO
species_17	camT	
species_1	ca	

Product

Table 141: Properties of each product.

Id	Name	SBO
species_21	camT_cal_D	

Kinetic Law**Derived unit** contains undeclared units

$$v_{68} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{17}] \cdot [\text{species}_1] \quad (209)$$

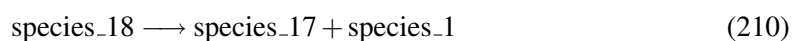
8.69 Reaction `reaction_68`

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

Name Ca dissociating from camT_cal_A site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 142: Properties of each reactant.

Id	Name	SBO
species_18	camT_cal_A	

Products

Table 143: Properties of each product.

Id	Name	SBO
species_17	camT	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{69} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_5} \cdot [\text{species_18}] \quad (211)$$

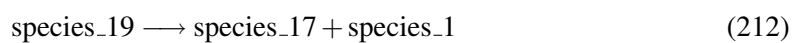
8.70 Reaction `reaction_69`

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

Name Ca dissociating from camT_cal_B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 144: Properties of each reactant.

Id	Name	SBO
species_19	camT_cal_B	

Products

Table 145: Properties of each product.

Id	Name	SBO
species_17	camT	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{70} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_6 \cdot [\text{species}_{19}] \quad (213)$$

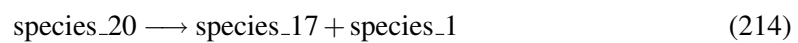
8.71 Reaction [reaction_70](#)

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

Name Ca dissociating from camT_cal_C site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 146: Properties of each reactant.

Id	Name	SBO
species_20	camT_cal_C	

Products

Table 147: Properties of each product.

Id	Name	SBO
species_17	camT	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{71} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_7 \cdot [\text{species}_{20}] \quad (215)$$

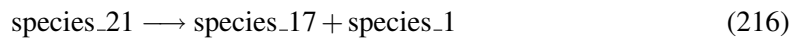
8.72 Reaction `reaction_71`

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

Name Ca dissociating from camT_cal_D site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 148: Properties of each reactant.

Id	Name	SBO
species_21	camT_cal_D	

Products

Table 149: Properties of each product.

Id	Name	SBO
species_17	camT	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{72} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_8 \cdot [\text{species}_{21}] \quad (217)$$

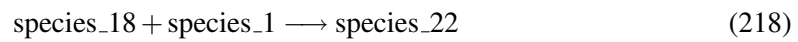
8.73 Reaction `reaction_72`

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

Name Ca binding to camT_cal_A site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 150: Properties of each reactant.

Id	Name	SBO
<code>species_{18}</code>	camT_cal_A	
<code>species_1</code>	ca	

Product

Table 151: Properties of each product.

Id	Name	SBO
<code>species_{22}</code>	camT_ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{73} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{18}] \cdot [\text{species}_1] \quad (219)$$

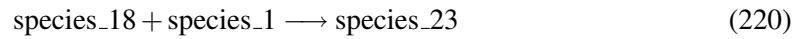
8.74 Reaction `reaction_73`

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

Name Ca binding to camT_cal_A site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 152: Properties of each reactant.

Id	Name	SBO
species_18	camT_cal_A	
species_1	ca	

Product

Table 153: Properties of each product.

Id	Name	SBO
species_23	camT_ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{74} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_18}] \cdot [\text{species_1}] \quad (221)$$

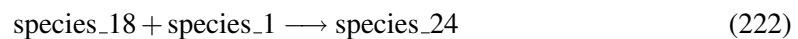
8.75 Reaction [reaction_74](#)

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

Name Ca binding to camT_cal_A site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 154: Properties of each reactant.

Id	Name	SBO
species_18	camT_cal_A	
species_1	ca	

Product

Table 155: Properties of each product.

Id	Name	SBO
species_24	camT_ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{75} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{18}] \cdot [\text{species}_1] \quad (223)$$

8.76 Reaction [reaction_75](#)

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

Name Ca binding to camT_cal_B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 156: Properties of each reactant.

Id	Name	SBO
species_19	camT_cal_B	
species_1	ca	

Product

Table 157: Properties of each product.

Id	Name	SBO
species_22	camT_ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{76} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{19}] \cdot [\text{species}_1] \quad (225)$$

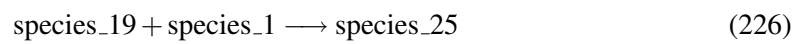
8.77 Reaction `reaction_76`

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

Name Ca binding to camT_cal_B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 158: Properties of each reactant.

Id	Name	SBO
<code>species_{19}</code>	camT_cal_B	
<code>species_1</code>	ca	

Product

Table 159: Properties of each product.

Id	Name	SBO
<code>species_{25}</code>	camT_ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{77} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{19}] \cdot [\text{species}_1] \quad (227)$$

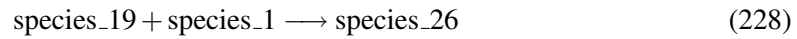
8.78 Reaction `reaction_77`

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

Name Ca binding to camT_cal_B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 160: Properties of each reactant.

Id	Name	SBO
species_19	camT_cal_B	
species_1	ca	

Product

Table 161: Properties of each product.

Id	Name	SBO
species_26	camT_cal2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{78} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_19}] \cdot [\text{species_1}] \quad (229)$$

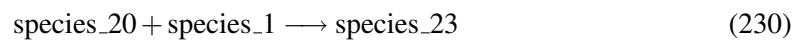
8.79 Reaction `reaction_78`

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

Name Ca binding to camT_cal_C site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 162: Properties of each reactant.

Id	Name	SBO
species_20	camT_cal_C	
species_1	ca	

Product

Table 163: Properties of each product.

Id	Name	SBO
species_23	camT_ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{79} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{20}] \cdot [\text{species}_1] \quad (231)$$

8.80 Reaction [reaction_79](#)

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

Name Ca binding to camT_ca1_C site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 164: Properties of each reactant.

Id	Name	SBO
species_20	camT_ca1_C	
species_1	ca	

Product

Table 165: Properties of each product.

Id	Name	SBO
species_25	camT_ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{80} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{20}] \cdot [\text{species}_1] \quad (233)$$

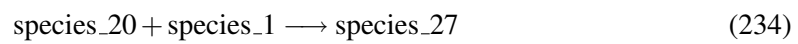
8.81 Reaction `reaction_80`

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

Name Ca binding to camT_cal_C site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 166: Properties of each reactant.

Id	Name	SBO
<code>species_{20}</code>	camT_cal_C	
<code>species_1</code>	ca	

Product

Table 167: Properties of each product.

Id	Name	SBO
<code>species_{27}</code>	camT_ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{81} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{20}] \cdot [\text{species}_1] \quad (235)$$

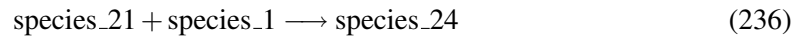
8.82 Reaction `reaction_81`

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

Name Ca binding to camT_cal_D site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 168: Properties of each reactant.

Id	Name	SBO
species_21	camT_cal_D	
species_1	ca	

Product

Table 169: Properties of each product.

Id	Name	SBO
species_24	camT_ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{82} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_21}] \cdot [\text{species_1}] \quad (237)$$

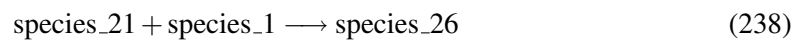
8.83 Reaction [reaction_82](#)

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

Name Ca binding to camT_cal_D site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 170: Properties of each reactant.

Id	Name	SBO
species_21	camT_cal_D	
species_1	ca	

Product

Table 171: Properties of each product.

Id	Name	SBO
species_26	camT_ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{83} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{21}] \cdot [\text{species}_1] \quad (239)$$

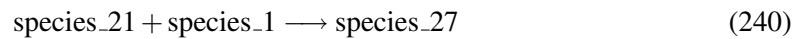
8.84 Reaction [reaction_83](#)

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

Name Ca binding to camT_cal_D site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 172: Properties of each reactant.

Id	Name	SBO
species_21	camT_cal_D	
species_1	ca	

Product

Table 173: Properties of each product.

Id	Name	SBO
species_27	camT_ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{84} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{21}] \cdot [\text{species}_1] \quad (241)$$

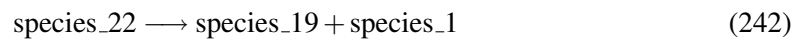
8.85 Reaction `reaction_84`

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

Name Ca dissociating from camT_ca2_AB site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 174: Properties of each reactant.

Id	Name	SBO
<code>species_{22}</code>	<code>camT_ca2_AB</code>	

Products

Table 175: Properties of each product.

Id	Name	SBO
<code>species_{19}</code>	<code>camT_cal_B</code>	
<code>species_1</code>	<code>ca</code>	

Kinetic Law

Derived unit contains undeclared units

$$v_{85} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_5 \cdot [\text{species}_{22}] \quad (243)$$

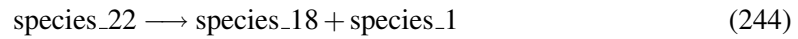
8.86 Reaction `reaction_85`

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

Name Ca dissociating from camT_ca2_AB site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 176: Properties of each reactant.

Id	Name	SBO
species_22	camT_ca2_AB	

Products

Table 177: Properties of each product.

Id	Name	SBO
species_18	camT_ca1_A	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{86} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_6} \cdot [\text{species_22}] \quad (245)$$

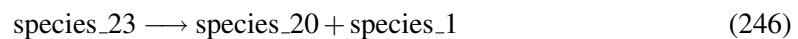
8.87 Reaction [reaction_86](#)

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

Name Ca dissociating from camT_ca2_AC site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 178: Properties of each reactant.

Id	Name	SBO
species_23	camT_ca2_AC	

Products

Table 179: Properties of each product.

Id	Name	SBO
species_20	camT_cal_C	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{87} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_5 \cdot [\text{species}_{23}] \quad (247)$$

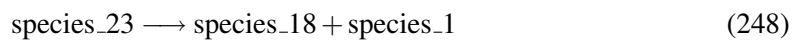
8.88 Reaction [reaction_87](#)

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

Name Ca dissociating from camT_ca2_AC site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 180: Properties of each reactant.

Id	Name	SBO
species_23	camT_ca2_AC	

Products

Table 181: Properties of each product.

Id	Name	SBO
species_18	camT_cal_A	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{88} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_7 \cdot [\text{species}_{23}] \quad (249)$$

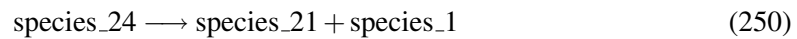
8.89 Reaction `reaction_88`

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

Name Ca dissociating from camT_ca2_AD site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 182: Properties of each reactant.

Id	Name	SBO
<code>species_24</code>	camT_ca2_AD	

Products

Table 183: Properties of each product.

Id	Name	SBO
<code>species_21</code>	camT_cal_D	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{89} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_5 \cdot [\text{species}_{24}] \quad (251)$$

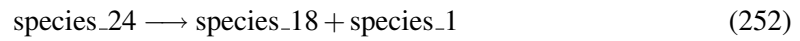
8.90 Reaction `reaction_89`

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

Name Ca dissociating from camT_ca2_AD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 184: Properties of each reactant.

Id	Name	SBO
species_24	camT_ca2_AD	

Products

Table 185: Properties of each product.

Id	Name	SBO
species_18	camT_cal_A	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{90} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_8} \cdot [\text{species_24}] \quad (253)$$

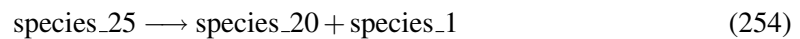
8.91 Reaction [reaction_90](#)

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

Name Ca dissociating from camT_ca2_BC site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 186: Properties of each reactant.

Id	Name	SBO
species_25	camT_ca2_BC	

Products

Table 187: Properties of each product.

Id	Name	SBO
species_20	camT_ca1_C	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{91} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_6 \cdot [\text{species}_25] \quad (255)$$

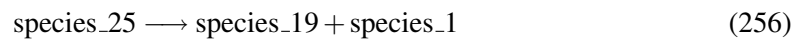
8.92 Reaction [reaction_91](#)

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

Name Ca dissociating from camT_ca2_BC site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 188: Properties of each reactant.

Id	Name	SBO
species_25	camT_ca2_BC	

Products

Table 189: Properties of each product.

Id	Name	SBO
species_19	camT_cal_B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{92} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_7 \cdot [\text{species}_{25}] \quad (257)$$

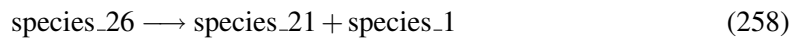
8.93 Reaction [reaction_92](#)

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

Name Ca dissociating from camT_ca2_BD site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 190: Properties of each reactant.

Id	Name	SBO
species_26	camT_ca2_BD	

Products

Table 191: Properties of each product.

Id	Name	SBO
species_21	camT_cal_D	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{93} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_6 \cdot [\text{species}_26] \quad (259)$$

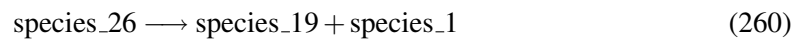
8.94 Reaction `reaction_93`

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

Name Ca dissociating from camT_ca2_BD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 192: Properties of each reactant.

Id	Name	SBO
<code>species_26</code>	camT_ca2_BD	

Products

Table 193: Properties of each product.

Id	Name	SBO
<code>species_19</code>	camT_cal_B	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{94} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_8 \cdot [\text{species}_26] \quad (261)$$

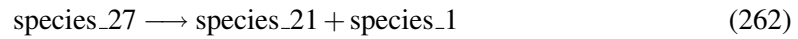
8.95 Reaction `reaction_94`

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

Name Ca dissociating from camT_ca2_CD site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 194: Properties of each reactant.

Id	Name	SBO
species_27	camT_ca2_CD	

Products

Table 195: Properties of each product.

Id	Name	SBO
species_21	camT_ca1_D	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{95} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_7} \cdot [\text{species_27}] \quad (263)$$

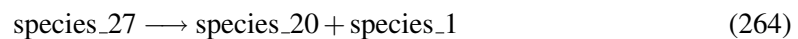
8.96 Reaction `reaction_95`

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

Name Ca dissociating from camT_ca2_CD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 196: Properties of each reactant.

Id	Name	SBO
species_27	camT_ca2_CD	

Products

Table 197: Properties of each product.

Id	Name	SBO
species_20	camT_ca1_C	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{96} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_8 \cdot [\text{species}_{27}] \quad (265)$$

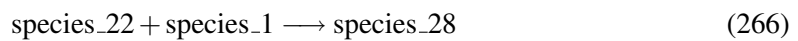
8.97 Reaction [reaction_96](#)

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

Name Ca binding to camT_ca2_AB site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 198: Properties of each reactant.

Id	Name	SBO
species_22	camT_ca2_AB	
species_1	ca	

Product

Table 199: Properties of each product.

Id	Name	SBO
species_28	camT_ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{97} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{22}] \cdot [\text{species}_1] \quad (267)$$

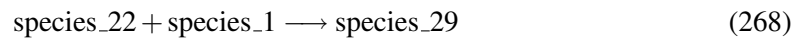
8.98 Reaction [reaction_97](#)

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

Name Ca binding to camT_ca2_AB site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 200: Properties of each reactant.

Id	Name	SBO
species_22	camT_ca2_AB	
species_1	ca	

Product

Table 201: Properties of each product.

Id	Name	SBO
species_29	camT_ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{98} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{22}] \cdot [\text{species}_1] \quad (269)$$

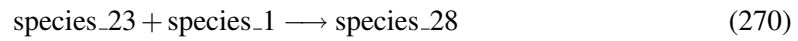
8.99 Reaction [reaction_98](#)

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

Name Ca binding to camT_ca2_AC site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 202: Properties of each reactant.

Id	Name	SBO
species_23	camT_ca2_AC	
species_1	ca	

Product

Table 203: Properties of each product.

Id	Name	SBO
species_28	camT_ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{99} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_23}] \cdot [\text{species_1}] \quad (271)$$

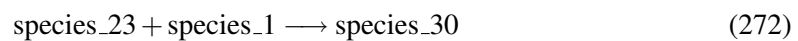
8.100 Reaction [reaction_99](#)

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

Name Ca binding to camT_ca2_AC site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 204: Properties of each reactant.

Id	Name	SBO
species_23	camT_ca2_AC	
species_1	ca	

Product

Table 205: Properties of each product.

Id	Name	SBO
species_30	camT_ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{100} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_23] \cdot [\text{species}_1] \quad (273)$$

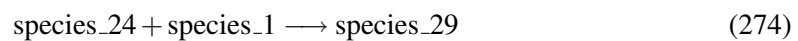
8.101 Reaction `reaction_100`

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

Name Ca binding to camT_ca2_AD site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 206: Properties of each reactant.

Id	Name	SBO
species_24	camT_ca2_AD	
species_1	ca	

Product

Table 207: Properties of each product.

Id	Name	SBO
species_29	camT_ca3_ABD	

Kinetic Law**Derived unit** contains undeclared units

$$v_{101} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{24}] \cdot [\text{species}_1] \quad (275)$$

8.102 Reaction `reaction_101`

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

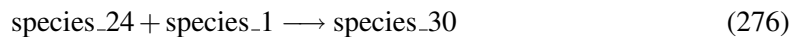
Name Ca binding to camT_ca2_AD site C**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 208: Properties of each reactant.

Id	Name	SBO
species_24	camT_ca2_AD	
species_1	ca	

Product

Table 209: Properties of each product.

Id	Name	SBO
species_30	camT_ca3_ACD	

Kinetic Law**Derived unit** contains undeclared units

$$v_{102} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{24}] \cdot [\text{species}_1] \quad (277)$$

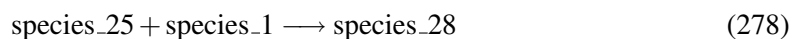
8.103 Reaction [reaction_102](#)

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

Name Ca binding to camT_ca2_BC site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 210: Properties of each reactant.

Id	Name	SBO
species_25	camT_ca2_BC	
species_1	ca	

Product

Table 211: Properties of each product.

Id	Name	SBO
species_28	camT_ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{103} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_25}] \cdot [\text{species_1}] \quad (279)$$

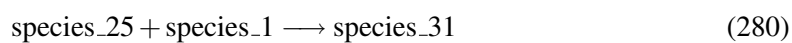
8.104 Reaction [reaction_103](#)

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

Name Ca binding to camT_ca2_BC site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 212: Properties of each reactant.

Id	Name	SBO
species_25	camT_ca2_BC	
species_1	ca	

Product

Table 213: Properties of each product.

Id	Name	SBO
species_31	camT_ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{104} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_25] \cdot [\text{species}_1] \quad (281)$$

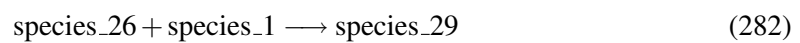
8.105 Reaction [reaction_104](#)

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

Name Ca binding to camT_ca2_BD site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 214: Properties of each reactant.

Id	Name	SBO
species_26	camT_ca2_BD	
species_1	ca	

Product

Table 215: Properties of each product.

Id	Name	SBO
species_29	camT_ca3_ABD	

Kinetic Law**Derived unit** contains undeclared units

$$v_{105} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{26}] \cdot [\text{species}_1] \quad (283)$$

8.106 Reaction `reaction_105`

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

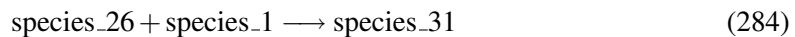
Name Ca binding to camT_ca2_BD site C**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 216: Properties of each reactant.

Id	Name	SBO
species_26	camT_ca2_BD	
species_1	ca	

Product

Table 217: Properties of each product.

Id	Name	SBO
species_31	camT_ca3_BCD	

Kinetic Law**Derived unit** contains undeclared units

$$v_{106} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{26}] \cdot [\text{species}_1] \quad (285)$$

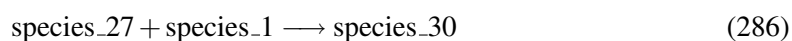
8.107 Reaction [reaction_106](#)

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

Name Ca binding to camT_ca2_CD site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 218: Properties of each reactant.

Id	Name	SBO
species_27	camT_ca2_CD	
species_1	ca	

Product

Table 219: Properties of each product.

Id	Name	SBO
species_30	camT_ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{107} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_27}] \cdot [\text{species_1}] \quad (287)$$

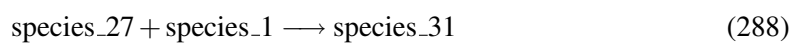
8.108 Reaction [reaction_107](#)

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

Name Ca binding to camT_ca2_CD site B

SBO:0000180 dissociation

Reaction equation



Reactants

Table 220: Properties of each reactant.

Id	Name	SBO
species_27	camT_ca2_CD	
species_1	ca	

Product

Table 221: Properties of each product.

Id	Name	SBO
species_31	camT_ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{108} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_27] \cdot [\text{species}_1] \quad (289)$$

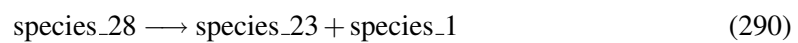
8.109 Reaction [reaction_108](#)

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

Name Ca dissociating from camT_ca3_ABC site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 222: Properties of each reactant.

Id	Name	SBO
species_28	camT_ca3_ABC	

Products

Table 223: Properties of each product.

Id	Name	SBO
species_23	camT_ca2_AC	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{109} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_6 \cdot [\text{species}_{28}] \quad (291)$$

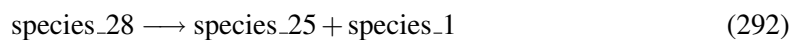
8.110 Reaction [reaction_109](#)

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

Name Ca dissociating from camT_ca3_ABC site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 224: Properties of each reactant.

Id	Name	SBO
species_28	camT_ca3_ABC	

Products

Table 225: Properties of each product.

Id	Name	SBO
species_25	camT_ca2_BC	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{110} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_5 \cdot [\text{species}_{28}] \quad (293)$$

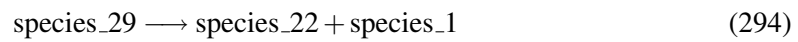
8.111 Reaction [reaction_110](#)

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

Name Ca dissociating from camT_ca3_ABD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 226: Properties of each reactant.		
Id	Name	SBO
species_29	camT_ca3_ABD	

Products

Table 227: Properties of each product.		
Id	Name	SBO
species_22	camT_ca2_AB	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{111} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_8 \cdot [\text{species}_{29}] \quad (295)$$

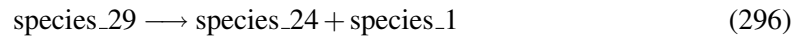
8.112 Reaction [reaction_111](#)

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

Name Ca dissociating from camT_ca3_ABD site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 228: Properties of each reactant.

Id	Name	SBO
species_29	camT_ca3_ABD	

Products

Table 229: Properties of each product.

Id	Name	SBO
species_24	camT_ca2_AD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{112} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_6} \cdot [\text{species_29}] \quad (297)$$

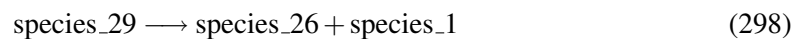
8.113 Reaction [reaction_112](#)

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

Name Ca dissociating from camT_ca3_ABD site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 230: Properties of each reactant.

Id	Name	SBO
species_29	camT_ca3_ABD	

Products

Table 231: Properties of each product.

Id	Name	SBO
species_26	camT_ca2_BD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{113} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_5 \cdot [\text{species}_{29}] \quad (299)$$

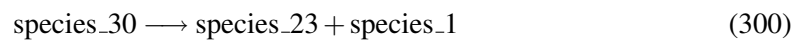
8.114 Reaction [reaction_113](#)

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

Name Ca dissociating from camT_ca3_ACD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 232: Properties of each reactant.

Id	Name	SBO
species_30	camT_ca3_ACD	

Products

Table 233: Properties of each product.

Id	Name	SBO
species_23	camT_ca2_AC	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{114} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_8 \cdot [\text{species}_{30}] \quad (301)$$

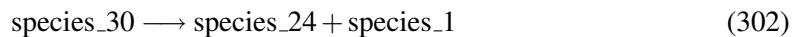
8.115 Reaction [reaction_114](#)

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

Name Ca dissociating from camT_ca3_ACD site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 234: Properties of each reactant.

Id	Name	SBO
species_30	camT_ca3_ACD	

Products

Table 235: Properties of each product.

Id	Name	SBO
species_24	camT_ca2_AD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{115} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_7 \cdot [\text{species}_{30}] \quad (303)$$

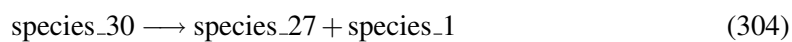
8.116 Reaction [reaction_115](#)

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

Name Ca dissociating from camT_ca3_ACD site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 236: Properties of each reactant.

Id	Name	SBO
species_30	camT_ca3_ACD	

Products

Table 237: Properties of each product.

Id	Name	SBO
species_27	camT_ca2_CD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{116} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_5} \cdot [\text{species_30}] \quad (305)$$

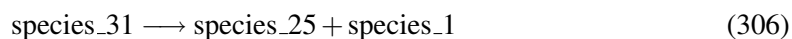
8.117 Reaction [reaction_116](#)

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

Name Ca dissociating from camT_ca3_BCD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 238: Properties of each reactant.

Id	Name	SBO
species_31	camT_ca3_BCD	

Products

Table 239: Properties of each product.

Id	Name	SBO
species_25	camT_ca2_BC	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{117} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_8 \cdot [\text{species}_{31}] \quad (307)$$

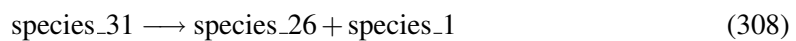
8.118 Reaction [reaction_117](#)

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

Name Ca dissociating from camT_ca3_BCD site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 240: Properties of each reactant.

Id	Name	SBO
species_31	camT_ca3_BCD	

Products

Table 241: Properties of each product.

Id	Name	SBO
species_26	camT_ca2_BD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{118} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_7 \cdot [\text{species}_{31}] \quad (309)$$

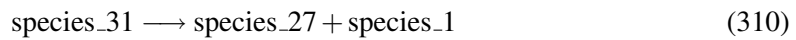
8.119 Reaction [reaction_118](#)

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

Name Ca dissociating from camT_ca3_BCD site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 242: Properties of each reactant.

Id	Name	SBO
species_31	camT_ca3_BCD	

Products

Table 243: Properties of each product.

Id	Name	SBO
species_27	camT_ca2_CD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{119} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_6 \cdot [\text{species}_{31}] \quad (311)$$

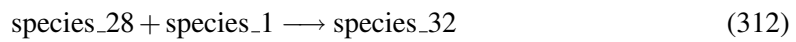
8.120 Reaction [reaction_119](#)

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

Name Ca binding to camT_ca3_ABC site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 244: Properties of each reactant.

Id	Name	SBO
<code>species_28</code>	camT_ca3_ABC	
<code>species_1</code>	ca	

Product

Table 245: Properties of each product.

Id	Name	SBO
<code>species_32</code>	camT_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{120} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{28}] \cdot [\text{species}_1] \quad (313)$$

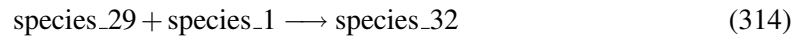
8.121 Reaction [reaction_120](#)

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

Name Ca binding to camT_ca3_ABD site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 246: Properties of each reactant.

Id	Name	SBO
species_29	camT_ca3_ABD	
species_1	ca	

Product

Table 247: Properties of each product.

Id	Name	SBO
species_32	camT_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{121} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_29}] \cdot [\text{species_1}] \quad (315)$$

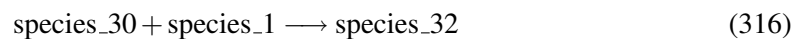
8.122 Reaction [reaction_121](#)

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

Name Ca binding to camT_ca3_ACD site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 248: Properties of each reactant.

Id	Name	SBO
species_30	camT_ca3_ACD	
species_1	ca	

Product

Table 249: Properties of each product.

Id	Name	SBO
species_32	camT_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{122} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{30}] \cdot [\text{species}_1] \quad (317)$$

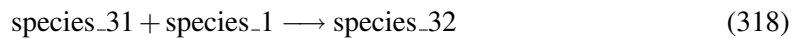
8.123 Reaction [reaction_122](#)

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

Name Ca binding to camT_ca3_BCD site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 250: Properties of each reactant.

Id	Name	SBO
species_31	camT_ca3_BCD	
species_1	ca	

Product

Table 251: Properties of each product.

Id	Name	SBO
species_32	camT_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{123} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{31}] \cdot [\text{species}_1] \quad (319)$$

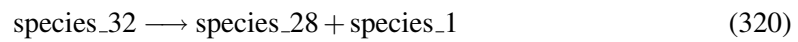
8.124 Reaction [reaction_123](#)

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

Name Ca dissociating from camT_ca4_ABCD site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 252: Properties of each reactant.

Id	Name	SBO
<code>species_32</code>	camT_ca4_ABCD	

Products

Table 253: Properties of each product.

Id	Name	SBO
<code>species_28</code>	camT_ca3_ABC	
<code>species_1</code>	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{124} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_8 \cdot [\text{species}_{32}] \quad (321)$$

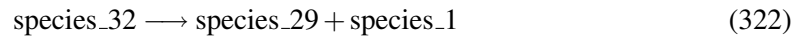
8.125 Reaction [reaction_124](#)

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

Name Ca dissociating from camT_ca4_ABCD site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 254: Properties of each reactant.

Id	Name	SBO
species_32	camT_ca4_ABCD	

Products

Table 255: Properties of each product.

Id	Name	SBO
species_29	camT_ca3_ABD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{125} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_7} \cdot [\text{species_32}] \quad (323)$$

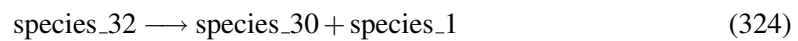
8.126 Reaction [reaction_125](#)

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

Name Ca dissociating from camT_ca4_ABCD site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 256: Properties of each reactant.

Id	Name	SBO
species_32	camT_ca4_ABCD	

Products

Table 257: Properties of each product.

Id	Name	SBO
species_30	camT_ca3_ACD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{126} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_6 \cdot [\text{species}_{32}] \quad (325)$$

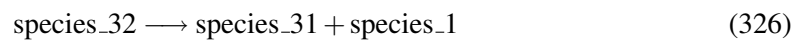
8.127 Reaction [reaction_126](#)

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

Name Ca dissociating from camT_ca4_ABCD site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 258: Properties of each reactant.

Id	Name	SBO
species_32	camT_ca4_ABCD	

Products

Table 259: Properties of each product.

Id	Name	SBO
species_31	camT_ca3_BCD	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{127} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_5 \cdot [\text{species}_{32}] \quad (327)$$

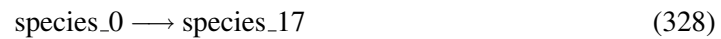
8.128 Reaction [reaction_127](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR to camT

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 260: Properties of each reactant.

Id	Name	SBO
species_0	camR	

Product

Table 261: Properties of each product.

Id	Name	SBO
species_17	camT	

Kinetic Law

Derived unit contains undeclared units

$$v_{128} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_9 \cdot [\text{species}_0] \quad (329)$$

8.129 Reaction [reaction_128](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT to camR

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 262: Properties of each reactant.

Id	Name	SBO
species_17	camT	

Product

Table 263: Properties of each product.

Id	Name	SBO
species_0	camR	

Kinetic Law

Derived unit contains undeclared units

$$v_{129} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_10} \cdot [\text{species_17}] \quad (331)$$

8.130 Reaction [reaction_129](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca1_A to camT_ca1_A

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 264: Properties of each reactant.

Id	Name	SBO
species_2	camR_ca1_A	

Product

Table 265: Properties of each product.

Id	Name	SBO
species_18	camT_cal_A	

Kinetic Law

Derived unit contains undeclared units

$$v_{130} = \text{vol}(\text{compartment}_0) \cdot \text{transition1_R_T}(\text{parameter}_9, \text{parameter}_{10}, [\text{species}_2]) \quad (333)$$

$$\text{transition1_R_T}(ka, b, \text{species}) = \text{species} \cdot ka \cdot b^{\frac{1}{2}} \quad (334)$$

$$\text{transition1_R_T}(ka, b, \text{species}) = \text{species} \cdot ka \cdot b^{\frac{1}{2}} \quad (335)$$

8.131 Reaction [reaction_130](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_cal_B to camT_cal_B

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 266: Properties of each reactant.

Id	Name	SBO
species_3	camR_cal_B	

Product

Table 267: Properties of each product.

Id	Name	SBO
species_19	camT_cal_B	

Kinetic Law

Derived unit contains undeclared units

$$v_{131} = \text{vol}(\text{compartment}_0) \cdot \text{transition1_R_T}(\text{parameter}_9, \text{parameter}_{12}, [\text{species}_3]) \quad (337)$$

$$\text{transition1_R_T}(ka, b, \text{species}) = \text{species} \cdot ka \cdot b^{\frac{1}{2}} \quad (338)$$

$$\text{transition1_R_T}(ka, b, \text{species}) = \text{species} \cdot ka \cdot b^{\frac{1}{2}} \quad (339)$$

8.132 Reaction [reaction_131](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_cal_C to camT_cal_C

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 268: Properties of each reactant.

Id	Name	SBO
species_4	camR_cal_C	

Product

Table 269: Properties of each product.

Id	Name	SBO
species_{20}	camT_cal_C	

Kinetic Law

Derived unit contains undeclared units

$$v_{132} = \text{vol}(\text{compartment}_0) \cdot \text{transition1_R_T}(\text{parameter}_9, \text{parameter}_{13}, [\text{species}_4]) \quad (341)$$

$$\text{transition1_R_T}(ka, b, \text{species}) = \text{species} \cdot ka \cdot b^{\frac{1}{2}} \quad (342)$$

$$\text{transition1_R_T}(ka, b, \text{species}) = \text{species} \cdot ka \cdot b^{\frac{1}{2}} \quad (343)$$

8.133 Reaction [reaction_132](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_cal_D to camT_cal_D

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 270: Properties of each reactant.

Id	Name	SBO
species_5	camR_cal_D	

Product

Table 271: Properties of each product.

Id	Name	SBO
species_{21}	camT_cal_D	

Kinetic Law

Derived unit contains undeclared units

$$v_{133} = \text{vol}(\text{compartment}_0) \cdot \text{transition1_R_T}(\text{parameter}_9, \text{parameter}_{14}, [\text{species}_5]) \quad (345)$$

$$\text{transition1_R_T}(ka,b,\text{species}) = \text{species} \cdot ka \cdot b^{\frac{1}{2}} \quad (346)$$

$$\text{transition1_R_T}(ka,b,\text{species}) = \text{species} \cdot ka \cdot b^{\frac{1}{2}} \quad (347)$$

8.134 Reaction [reaction_133](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_cal_A to camR_cal_A

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 272: Properties of each reactant.

Id	Name	SBO
species_18	camT_cal_A	

Product

Table 273: Properties of each product.

Id	Name	SBO
species_2	camR_cal_A	

Kinetic Law

Derived unit contains undeclared units

$$v_{134} = \text{vol}(\text{compartment}_0) \cdot \text{function_1}(\text{parameter_10}, \text{parameter_11}, [\text{species_18}]) \quad (349)$$

$$\text{function_1}(\text{parameter_10}, \text{parameter_11}, [\text{species_18}]) = \frac{[\text{species_18}] \cdot \text{parameter_10}}{\text{parameter_11}^{\frac{1}{2}}} \quad (350)$$

$$\text{function_1}(\text{parameter_10}, \text{parameter_11}, [\text{species_18}]) = \frac{[\text{species_18}] \cdot \text{parameter_10}}{\text{parameter_11}^{\frac{1}{2}}} \quad (351)$$

8.135 Reaction [reaction_134](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_cal_B to camR_cal_B

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 274: Properties of each reactant.

Id	Name	SBO
species_19	camT_cal_B	

Product

Table 275: Properties of each product.

Id	Name	SBO
species_3	camR_cal_B	

Kinetic Law

Derived unit contains undeclared units

$$v_{135} = \text{vol}(\text{compartment}_0) \cdot \text{function_2}(\text{parameter_10}, \text{parameter_12}, [\text{species_19}]) \quad (353)$$

$$\text{function_2}(\text{parameter_10}, \text{parameter_12}, [\text{species_19}]) = \frac{[\text{species_19}] \cdot \text{parameter_10}}{\text{parameter_12}^{\frac{1}{2}}} \quad (354)$$

$$\text{function_2}(\text{parameter_10}, \text{parameter_12}, [\text{species_19}]) = \frac{[\text{species_19}] \cdot \text{parameter_10}}{\text{parameter_12}^{\frac{1}{2}}} \quad (355)$$

8.136 Reaction [reaction_135](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_cal_C to camR_cal_C

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 276: Properties of each reactant.

Id	Name	SBO
species_20	camT_cal_C	

Product

Table 277: Properties of each product.

Id	Name	SBO
species_4	camR_cal_C	

Kinetic Law

Derived unit contains undeclared units

$$v_{136} = \text{vol}(\text{compartment}_0) \cdot \text{function_3}(\text{parameter}_{10}, \text{parameter}_{13}, [\text{species}_{20}])$$

(357)

$$\text{function_3}(\text{parameter}_{10}, \text{parameter}_{13}, [\text{species}_{20}]) = \frac{[\text{species}_{20}] \cdot \text{parameter}_{10}}{\text{parameter}_{13}^{\frac{1}{2}}}$$

(358)

$$\text{function_3}(\text{parameter}_{10}, \text{parameter}_{13}, [\text{species}_{20}]) = \frac{[\text{species}_{20}] \cdot \text{parameter}_{10}}{\text{parameter}_{13}^{\frac{1}{2}}}$$

(359)

8.137 Reaction [reaction_136](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_cal_D to camR_cal_D

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 278: Properties of each reactant.

Id	Name	SBO
species_21	camT_ca1_D	

Product

Table 279: Properties of each product.

Id	Name	SBO
species_5	camR_ca1_D	

Kinetic Law

Derived unit contains undeclared units

$$v_{137} = \text{vol}(\text{compartment}_0) \cdot \text{function_4}(\text{parameter_10}, \text{parameter_14}, [\text{species_21}]) \quad (361)$$

$$\text{function_4}(\text{parameter_10}, \text{parameter_14}, [\text{species_21}]) = \frac{[\text{species_21}] \cdot \text{parameter_10}}{\text{parameter_14}^{\frac{1}{2}}} \quad (362)$$

$$\text{function_4}(\text{parameter_10}, \text{parameter_14}, [\text{species_21}]) = \frac{[\text{species_21}] \cdot \text{parameter_10}}{\text{parameter_14}^{\frac{1}{2}}} \quad (363)$$

8.138 Reaction [reaction_137](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca2_AB to camT_ca2_AB

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 280: Properties of each reactant.

Id	Name	SBO
species_6	camR_ca2_AB	

Product

Table 281: Properties of each product.

Id	Name	SBO
species_22	camT_ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{138} = \text{vol}(\text{compartment}_0) \cdot \text{function_5}(\text{parameter_11}, \text{parameter_12}, \text{parameter_9}, [\text{species_6}]) \quad (365)$$

$$\begin{aligned} & \text{function_5}(\text{parameter_11}, \text{parameter_12}, \text{parameter_9}, [\text{species_6}]) \\ &= [\text{species_6}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12})^{\frac{1}{2}} \end{aligned} \quad (366)$$

$$\begin{aligned} & \text{function_5}(\text{parameter_11}, \text{parameter_12}, \text{parameter_9}, [\text{species_6}]) \\ &= [\text{species_6}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12})^{\frac{1}{2}} \end{aligned} \quad (367)$$

8.139 Reaction [reaction_138](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca2_AC to camT_ca2_AC

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 282: Properties of each reactant.

Id	Name	SBO
species_7	camR_ca2_AC	

Product

Table 283: Properties of each product.

Id	Name	SBO
species_23	camT_ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{139} = \text{vol}(\text{compartment}_0) \cdot \text{function_6}(\text{parameter_11}, \text{parameter_13}, \text{parameter_9}, [\text{species_7}]) \quad (369)$$

$$\begin{aligned} & \text{function_6}(\text{parameter_11}, \text{parameter_13}, \text{parameter_9}, [\text{species_7}]) \\ &= [\text{species_7}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_13})^{\frac{1}{2}} \end{aligned} \quad (370)$$

$$\begin{aligned} & \text{function_6}(\text{parameter_11}, \text{parameter_13}, \text{parameter_9}, [\text{species_7}]) \\ &= [\text{species_7}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_13})^{\frac{1}{2}} \end{aligned} \quad (371)$$

8.140 Reaction [reaction_139](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca2_AD to camT_ca2_AD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 284: Properties of each reactant.

Id	Name	SBO
species_8	camR_ca2_AD	

Product

Table 285: Properties of each product.

Id	Name	SBO
species_24	camT_ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{140} = \text{vol}(\text{compartment}_0) \cdot \text{function_7}(\text{parameter_11}, \text{parameter_14}, \text{parameter_9}, [\text{species_8}]) \quad (373)$$

$$\begin{aligned} & \text{function_7}(\text{parameter_11}, \text{parameter_14}, \text{parameter_9}, [\text{species_8}]) \\ &= [\text{species_8}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (374)$$

$$\begin{aligned} & \text{function_7}(\text{parameter_11}, \text{parameter_14}, \text{parameter_9}, [\text{species_8}]) \\ &= [\text{species_8}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (375)$$

8.141 Reaction [reaction_140](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca2_BC to camT_ca2_BC

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 286: Properties of each reactant.

Id	Name	SBO
species_9	camR_ca2_BC	

Product

Table 287: Properties of each product.

Id	Name	SBO
species_25	camT_ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{141} = \text{vol}(\text{compartment}_0) \cdot \text{function_8}(\text{parameter_12}, \text{parameter_13}, \text{parameter_9}, [\text{species_9}]) \quad (377)$$

$$\begin{aligned} & \text{function_8}(\text{parameter_12}, \text{parameter_13}, \text{parameter_9}, [\text{species_9}]) \\ &= [\text{species_9}] \cdot \text{parameter_9} \cdot (\text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}} \end{aligned} \quad (378)$$

$$\begin{aligned} & \text{function_8}(\text{parameter_12}, \text{parameter_13}, \text{parameter_9}, [\text{species_9}]) \\ &= [\text{species_9}] \cdot \text{parameter_9} \cdot (\text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}} \end{aligned} \quad (379)$$

8.142 Reaction [reaction_141](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca2_BD to camT_ca2_BD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 288: Properties of each reactant.

Id	Name	SBO
species_10	camR_ca2_BD	

Product

Table 289: Properties of each product.

Id	Name	SBO
species_26	camT_ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{142} = \text{vol}(\text{compartment}_0) \cdot \text{function}_9(\text{parameter}_{12}, \text{parameter}_{14}, \text{parameter}_9, [\text{species}_{10}]) \quad (381)$$

$$\begin{aligned} & \text{function}_9(\text{parameter}_{12}, \text{parameter}_{14}, \text{parameter}_9, [\text{species}_{10}]) \\ &= [\text{species}_{10}] \cdot \text{parameter}_9 \cdot (\text{parameter}_{12} \cdot \text{parameter}_{14})^{\frac{1}{2}} \end{aligned} \quad (382)$$

$$\begin{aligned} & \text{function}_9(\text{parameter}_{12}, \text{parameter}_{14}, \text{parameter}_9, [\text{species}_{10}]) \\ &= [\text{species}_{10}] \cdot \text{parameter}_9 \cdot (\text{parameter}_{12} \cdot \text{parameter}_{14})^{\frac{1}{2}} \end{aligned} \quad (383)$$

8.143 Reaction [reaction_142](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca2_CD to camT_ca2_CD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 290: Properties of each reactant.

Id	Name	SBO
species_11	camR_ca2_CD	

Product

Table 291: Properties of each product.

Id	Name	SBO
species_27	camT_ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{143} = \text{vol}(\text{compartment}_0) \cdot \text{function_10}(\text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_11}]) \quad (385)$$

$$\begin{aligned} & \text{function_10}(\text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_11}]) \\ &= [\text{species_11}] \cdot \text{parameter_9} \cdot (\text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (386)$$

$$\begin{aligned} & \text{function_10}(\text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_11}]) \\ &= [\text{species_11}] \cdot \text{parameter_9} \cdot (\text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (387)$$

8.144 Reaction [reaction_143](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca2_AB to camR_ca2_AB

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 292: Properties of each reactant.

Id	Name	SBO
species_22	camT_ca2_AB	

Product

Table 293: Properties of each product.

Id	Name	SBO
species_6	camR_ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{144} &= \text{vol}(\text{compartment}_0) \cdot \text{function_11}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, [\text{species_22}]) \\ &\quad (389) \end{aligned}$$

$$\begin{aligned} &\text{function_11}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, [\text{species_22}]) \\ &= \frac{[\text{species_22}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12})^{\frac{1}{2}}} \end{aligned} \quad (390)$$

$$\begin{aligned} &\text{function_11}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, [\text{species_22}]) \\ &= \frac{[\text{species_22}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12})^{\frac{1}{2}}} \end{aligned} \quad (391)$$

8.145 Reaction [reaction_144](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca2_AC to camR_ca2_AC

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 294: Properties of each reactant.

Id	Name	SBO
species_23	camT_ca2_AC	

Product

Table 295: Properties of each product.

Id	Name	SBO
species_7	camR_ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{145} &= \text{vol}(\text{compartment}_0) \cdot \text{function_12}(\text{parameter_10}, \text{parameter_11}, \text{parameter_13}, [\text{species_23}]) \\ &\quad (393) \end{aligned}$$

$$\begin{aligned} &\text{function_12}(\text{parameter_10}, \text{parameter_11}, \text{parameter_13}, [\text{species_23}]) \\ &= \frac{[\text{species_23}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_13})^{\frac{1}{2}}} \end{aligned} \quad (394)$$

$$\begin{aligned} &\text{function_12}(\text{parameter_10}, \text{parameter_11}, \text{parameter_13}, [\text{species_23}]) \\ &= \frac{[\text{species_23}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_13})^{\frac{1}{2}}} \end{aligned} \quad (395)$$

8.146 Reaction [reaction_145](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca2_AD to camR_ca2_AD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 296: Properties of each reactant.

Id	Name	SBO
species_24	camT_ca2_AD	

Product

Table 297: Properties of each product.

Id	Name	SBO
species_8	camR_ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{146} = \text{vol}(\text{compartment}_0) \cdot \text{function_13}(\text{parameter_10}, \text{parameter_11}, \text{parameter_14}, [\text{species_24}]) \quad (397)$$

$$\begin{aligned} & \text{function_13}(\text{parameter_10}, \text{parameter_11}, \text{parameter_14}, [\text{species_24}]) \\ &= \frac{[\text{species_24}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (398)$$

$$\begin{aligned} & \text{function_13}(\text{parameter_10}, \text{parameter_11}, \text{parameter_14}, [\text{species_24}]) \\ &= \frac{[\text{species_24}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (399)$$

8.147 Reaction [reaction_146](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca2_BC to camR_ca2_BC

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 298: Properties of each reactant.

Id	Name	SBO
species_25	camT_ca2_BC	

Product

Table 299: Properties of each product.

Id	Name	SBO
species_9	camR_ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{147} = \text{vol}(\text{compartment}_0) \cdot \text{function_14}(\text{parameter_10}, \text{parameter_12}, \text{parameter_13}, [\text{species_25}]) \quad (401)$$

$$\begin{aligned} & \text{function_14}(\text{parameter_10}, \text{parameter_12}, \text{parameter_13}, [\text{species_25}]) \\ &= \frac{[\text{species_25}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}}} \end{aligned} \quad (402)$$

$$\begin{aligned} & \text{function_14}(\text{parameter_10}, \text{parameter_12}, \text{parameter_13}, [\text{species_25}]) \\ &= \frac{[\text{species_25}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}}} \end{aligned} \quad (403)$$

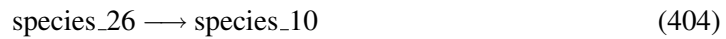
8.148 Reaction [reaction_147](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca2_BD to camR_ca2_BD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 300: Properties of each reactant.

Id	Name	SBO
species_26	camT_ca2_BD	

Product

Table 301: Properties of each product.

Id	Name	SBO
species_10	camR_ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{148} &= \text{vol}(\text{compartment}_0) \cdot \text{function_15}(\text{parameter_10}, \text{parameter_12}, \text{parameter_14}, [\text{species_26}]) \\ &\quad (405) \end{aligned}$$

$$\begin{aligned} &\text{function_15}(\text{parameter_10}, \text{parameter_12}, \text{parameter_14}, [\text{species_26}]) \\ &= \frac{[\text{species_26}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (406)$$

$$\begin{aligned} &\text{function_15}(\text{parameter_10}, \text{parameter_12}, \text{parameter_14}, [\text{species_26}]) \\ &= \frac{[\text{species_26}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (407)$$

8.149 Reaction [reaction_148](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca2_CD to camR_ca2_CD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 302: Properties of each reactant.

Id	Name	SBO
species_27	camT_ca2_CD	

Product

Table 303: Properties of each product.

Id	Name	SBO
species_11	camR_ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$\begin{aligned} v_{149} &= \text{vol}(\text{compartment}_0) \cdot \text{function_16}(\text{parameter_10}, \text{parameter_13}, \text{parameter_14}, [\text{species_27}]) \\ &\quad (409) \end{aligned}$$

$$\begin{aligned} &\text{function_16}(\text{parameter_10}, \text{parameter_13}, \text{parameter_14}, [\text{species_27}]) \\ &= \frac{[\text{species_27}] \cdot \text{parameter_10}}{(\text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (410)$$

$$\begin{aligned} &\text{function_16}(\text{parameter_10}, \text{parameter_13}, \text{parameter_14}, [\text{species_27}]) \\ &= \frac{[\text{species_27}] \cdot \text{parameter_10}}{(\text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (411)$$

8.150 Reaction [reaction_149](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca3_ABC to camT_ca3_ABC

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 304: Properties of each reactant.

Id	Name	SBO
species_12	camR_ca3_ABC	

Product

Table 305: Properties of each product.

Id	Name	SBO
species_28	camT_ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{150} = \text{vol}(\text{compartment}_0) \cdot \text{function_17}(\text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_9}, [\text{species_12}]) \quad (413)$$

$$\begin{aligned} & \text{function_17}(\text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_9}, [\text{species_12}]) \\ &= [\text{species_12}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}} \end{aligned} \quad (414)$$

$$\begin{aligned} & \text{function_17}(\text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_9}, [\text{species_12}]) \\ &= [\text{species_12}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}} \end{aligned} \quad (415)$$

8.151 Reaction [reaction_150](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca3_ABD to camT_ca3_ABD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 306: Properties of each reactant.

Id	Name	SBO
species_13	camR_ca3_ABD	

Product

Table 307: Properties of each product.

Id	Name	SBO
species_29	camT_ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{151} = \text{vol}(\text{compartment}_0) \cdot \text{function_18}(\text{parameter_11}, \text{parameter_12}, \text{parameter_14}, \text{parameter_9}, [\text{species_13}]) \quad (417)$$

$$\begin{aligned} & \text{function_18}(\text{parameter_11}, \text{parameter_12}, \text{parameter_14}, \text{parameter_9}, [\text{species_13}]) \\ &= [\text{species_13}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (418)$$

$$\begin{aligned} & \text{function_18}(\text{parameter_11}, \text{parameter_12}, \text{parameter_14}, \text{parameter_9}, [\text{species_13}]) \\ &= [\text{species_13}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (419)$$

8.152 Reaction [reaction_151](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca3_ACD to camT_ca3_ACD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 308: Properties of each reactant.

Id	Name	SBO
species_14	camR_ca3_ACD	

Product

Table 309: Properties of each product.

Id	Name	SBO
species_30	camT_ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{152} = \text{vol}(\text{compartment}_0) \cdot \text{function_19}(\text{parameter_11}, \text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_14}]) \quad (421)$$

$$\begin{aligned} & \text{function_19}(\text{parameter_11}, \text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_14}]) \\ &= [\text{species_14}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (422)$$

$$\begin{aligned} & \text{function_19}(\text{parameter_11}, \text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_14}]) \\ &= [\text{species_14}] \cdot \text{parameter_9} \cdot (\text{parameter_11} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (423)$$

8.153 Reaction [reaction_152](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca3_BCD to camT_ca3_BCD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 310: Properties of each reactant.

Id	Name	SBO
species_15	camR_ca3_BCD	

Product

Table 311: Properties of each product.

Id	Name	SBO
species_31	camT_ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{153} = \text{vol}(\text{compartment}_0) \cdot \text{function_20}(\text{parameter_12}, \text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_15}]) \quad (425)$$

$$\begin{aligned} & \text{function_20}(\text{parameter_12}, \text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_15}]) \\ &= [\text{species_15}] \cdot \text{parameter_9} \cdot (\text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (426)$$

$$\begin{aligned} & \text{function_20}(\text{parameter_12}, \text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_15}]) \\ &= [\text{species_15}] \cdot \text{parameter_9} \cdot (\text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (427)$$

8.154 Reaction [reaction_153](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca3_ABC to camR_ca3_ABC

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 312: Properties of each reactant.

Id	Name	SBO
species_28	camT_ca3_ABC	

Product

Table 313: Properties of each product.

Id	Name	SBO
species_12	camR_ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{154} = \text{vol}(\text{compartment}_0) \cdot \text{function_21}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_13}, [\text{species_28}]) \quad (429)$$

$$\begin{aligned} & \text{function_21}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_13}, [\text{species_28}]) \\ &= \frac{[\text{species_28}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}}} \end{aligned} \quad (430)$$

$$\begin{aligned} & \text{function_21}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_13}, [\text{species_28}]) \\ &= \frac{[\text{species_28}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13})^{\frac{1}{2}}} \end{aligned} \quad (431)$$

8.155 Reaction [reaction_154](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca3_ABD to camR_ca3_ABD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 314: Properties of each reactant.

Id	Name	SBO
species_29	camT_ca3_ABD	

Product

Table 315: Properties of each product.

Id	Name	SBO
species_13	camR_ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{155} = \text{vol}(\text{compartment}_0) \cdot \text{function_22}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_14}, [\text{species_29}]) \quad (433)$$

$$\begin{aligned} & \text{function_22}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_14}, [\text{species_29}]) \\ &= \frac{[\text{species_29}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (434)$$

$$\begin{aligned} & \text{function_22}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_14}, [\text{species_29}]) \\ &= \frac{[\text{species_29}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (435)$$

8.156 Reaction [reaction_155](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca3_ACD to camR_ca3_ACD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 316: Properties of each reactant.

Id	Name	SBO
species_30	camT_ca3_ACD	

Product

Table 317: Properties of each product.

Id	Name	SBO
species_14	camR_ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{156} = \text{vol}(\text{compartment}_0) \cdot \text{function_23}(\text{parameter_10}, \text{parameter_11}, \text{parameter_13}, \text{parameter_14}, [\text{species_30}]) \quad (437)$$

$$\begin{aligned} & \text{function_23}(\text{parameter_10}, \text{parameter_11}, \text{parameter_13}, \text{parameter_14}, [\text{species_30}]) \\ &= \frac{[\text{species_30}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (438)$$

$$\begin{aligned} & \text{function_23}(\text{parameter_10}, \text{parameter_11}, \text{parameter_13}, \text{parameter_14}, [\text{species_30}]) \\ &= \frac{[\text{species_30}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (439)$$

8.157 Reaction [reaction_156](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca3_BCD to camR_ca3_BCD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 318: Properties of each reactant.

Id	Name	SBO
species_31	camT_ca3_BCD	

Product

Table 319: Properties of each product.

Id	Name	SBO
species_15	camR_ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{157} = \text{vol}(\text{compartment}_0) \cdot \text{function_24}(\text{parameter_10}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, [\text{species_31}]) \quad (441)$$

$$\begin{aligned} & \text{function_24}(\text{parameter_10}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, [\text{species_31}]) \\ &= \frac{[\text{species_31}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (442)$$

$$\begin{aligned} & \text{function_24}(\text{parameter_10}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, [\text{species_31}]) \\ &= \frac{[\text{species_31}] \cdot \text{parameter_10}}{(\text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \end{aligned} \quad (443)$$

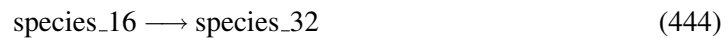
8.158 Reaction [reaction_157](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camR_ca4_ABCD to camT_ca4_ABCD

SBO:0000181 conformational transition

Reaction equation



Reactant

Table 320: Properties of each reactant.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Product

Table 321: Properties of each product.

Id	Name	SBO
species_32	camT_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{158} = \text{vol}(\text{compartment}_0) \cdot \text{function_25}(\text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, \text{parameter_9}, [\text{species_16}]) \quad (445)$$

$$\begin{aligned} \text{function_25}(\text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, \\ \text{parameter_9}, [\text{species_16}]) = [\text{species_16}] \cdot \text{parameter_9} \\ \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (446)$$

$$\begin{aligned} \text{function_25}(\text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, \\ \text{parameter_9}, [\text{species_16}]) = [\text{species_16}] \cdot \text{parameter_9} \\ \cdot (\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}} \end{aligned} \quad (447)$$

8.159 Reaction [reaction_158](#)

This is an irreversible reaction of one reactant forming one product.

Name Transition camT_ca4_ABCD to camR_ca4_ABCD

SBO:0000177 non-covalent binding

Reaction equation



Reactant

Table 322: Properties of each reactant.

Id	Name	SBO
species_32	camT_ca4_ABCD	

Product

Table 323: Properties of each product.

Id	Name	SBO
species_16	camR_ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{159} = \text{vol}(\text{compartment}_0) \cdot \text{function_26}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, [\text{species_32}]) \quad (449)$$

$$\text{function_26}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, [\text{species_32}]) = \frac{[\text{species_32}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \quad (450)$$

$$\text{function_26}(\text{parameter_10}, \text{parameter_11}, \text{parameter_12}, \text{parameter_13}, \text{parameter_14}, [\text{species_32}]) = \frac{[\text{species_32}] \cdot \text{parameter_10}}{(\text{parameter_11} \cdot \text{parameter_12} \cdot \text{parameter_13} \cdot \text{parameter_14})^{\frac{1}{2}}} \quad (451)$$

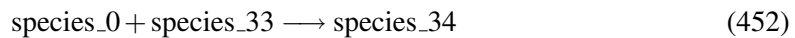
8.160 Reaction [reaction_159](#)

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

Name CaMKII binding to camR

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 324: Properties of each reactant.

Id	Name	SBO
species_0	camR	
species_33	CaMKII	

Product

Table 325: Properties of each product.

Id	Name	SBO
species_34	camR_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{160} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_0] \cdot [\text{species}_{33}] \quad (453)$$

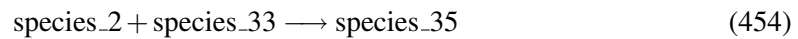
8.161 Reaction [reaction_160](#)

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

Name CaMKII binding to camR_cal_A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 326: Properties of each reactant.

Id	Name	SBO
species_2	camR_cal_A	
species_33	CaMKII	

Product

Table 327: Properties of each product.

Id	Name	SBO
species_35	camR_cal_A_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{161} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_2] \cdot [\text{species}_{33}] \quad (455)$$

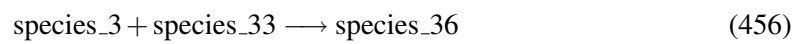
8.162 Reaction [reaction_161](#)

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

Name CaMKII binding to camR_cal_B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 328: Properties of each reactant.

Id	Name	SBO
species_3	camR_cal_B	
species_33	CaMKII	

Product

Table 329: Properties of each product.

Id	Name	SBO
species_36	camR_cal_B_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{162} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_3] \cdot [\text{species}_{33}] \quad (457)$$

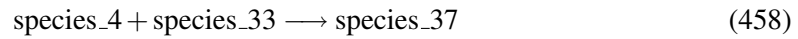
8.163 Reaction [reaction_162](#)

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

Name CaMKII binding to camR_cal_C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 330: Properties of each reactant.

Id	Name	SBO
species_4	camR_cal_C	
species_33	CaMKII	

Product

Table 331: Properties of each product.

Id	Name	SBO
species_37	camR_cal_C_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{163} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_15} \cdot [\text{species_4}] \cdot [\text{species_33}] \quad (459)$$

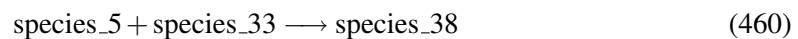
8.164 Reaction [reaction_163](#)

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

Name CaMKII binding to camR_cal_D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 332: Properties of each reactant.

Id	Name	SBO
species_5	camR_cal_D	
species_33	CaMKII	

Product

Table 333: Properties of each product.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{164} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_5] \cdot [\text{species}_{33}] \quad (461)$$

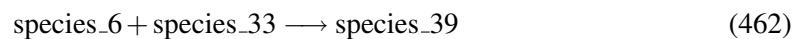
8.165 Reaction [reaction_164](#)

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

Name CaMKII binding to camR_ca2_AB

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 334: Properties of each reactant.

Id	Name	SBO
species_6	camR_ca2_AB	
species_33	CaMKII	

Product

Table 335: Properties of each product.

Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{165} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_6] \cdot [\text{species}_{33}] \quad (463)$$

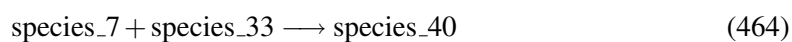
8.166 Reaction [reaction_165](#)

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

Name CaMKII binding to camR_ca2_AC

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 336: Properties of each reactant.

Id	Name	SBO
species_7	camR_ca2_AC	
species_33	CaMKII	

Product

Table 337: Properties of each product.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

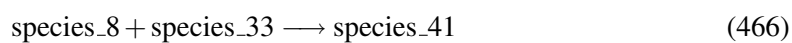
$$v_{166} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_7] \cdot [\text{species}_{33}] \quad (465)$$

8.167 Reaction [reaction_166](#)

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

Name CaMKII binding to camR_ca2_AD

Reaction equation



Reactants

Table 338: Properties of each reactant.

Id	Name	SBO
species_8	camR_ca2_AD	
species_33	CaMKII	

Product

Table 339: Properties of each product.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{167} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_8] \cdot [\text{species}_{33}] \quad (467)$$

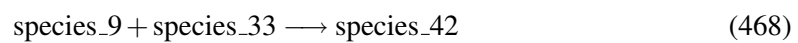
8.168 Reaction [reaction_167](#)

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

Name CaMKII binding to camR_ca2_BC

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 340: Properties of each reactant.

Id	Name	SBO
species_9	camR_ca2_BC	
species_33	CaMKII	

Product

Table 341: Properties of each product.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	

Kinetic Law**Derived unit** contains undeclared units

$$v_{168} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_9] \cdot [\text{species}_{33}] \quad (469)$$

8.169 Reaction [reaction_168](#)

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

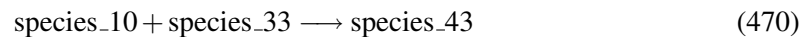
Name CaMKII binding to camR_ca2_BD**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 342: Properties of each reactant.

Id	Name	SBO
species_10	camR_ca2_BD	
species_33	CaMKII	

Product

Table 343: Properties of each product.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	

Kinetic Law**Derived unit** contains undeclared units

$$v_{169} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_{10}] \cdot [\text{species}_{33}] \quad (471)$$

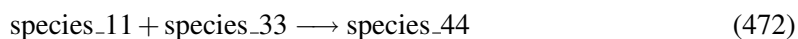
8.170 Reaction [reaction_169](#)

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

Name CaMKII binding to camR_ca2_CD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 344: Properties of each reactant.

Id	Name	SBO
species_11	camR_ca2_CD	
species_33	CaMKII	

Product

Table 345: Properties of each product.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{170} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_15} \cdot [\text{species_11}] \cdot [\text{species_33}] \quad (473)$$

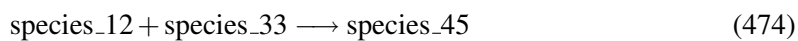
8.171 Reaction [reaction_170](#)

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

Name CaMKII binding to camR_ca3_ABC

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 346: Properties of each reactant.

Id	Name	SBO
species_12	camR_ca3_ABC	
species_33	CaMKII	

Product

Table 347: Properties of each product.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{171} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_{12}] \cdot [\text{species}_{33}] \quad (475)$$

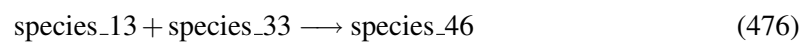
8.172 Reaction [reaction_171](#)

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

Name CaMKII binding to camR_ca3_ABD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 348: Properties of each reactant.

Id	Name	SBO
species_13	camR_ca3_ABD	
species_33	CaMKII	

Product

Table 349: Properties of each product.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{172} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_{13}] \cdot [\text{species}_{33}] \quad (477)$$

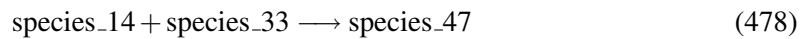
8.173 Reaction [reaction_172](#)

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

Name CaMKII binding to camR_ca3_ACD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 350: Properties of each reactant.

Id	Name	SBO
species_14	camR_ca3_ACD	
species_33	CaMKII	

Product

Table 351: Properties of each product.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{173} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_{14}] \cdot [\text{species}_{33}] \quad (479)$$

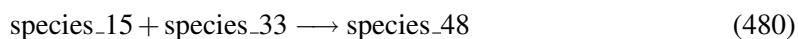
8.174 Reaction [reaction_173](#)

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

Name CaMKII binding to camR_ca3_BCD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 352: Properties of each reactant.

Id	Name	SBO
species_15	camR_ca3_BCD	
species_33	CaMKII	

Product

Table 353: Properties of each product.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{174} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_15} \cdot [\text{species_15}] \cdot [\text{species_33}] \quad (481)$$

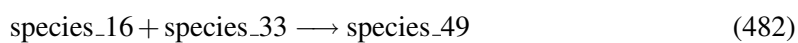
8.175 Reaction [reaction_174](#)

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

Name CaMKII binding to camR_ca4_ABCD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 354: Properties of each reactant.

Id	Name	SBO
species_16	camR_ca4_ABCD	
species_33	CaMKII	

Product

Table 355: Properties of each product.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{175} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{15} \cdot [\text{species}_{16}] \cdot [\text{species}_{33}] \quad (483)$$

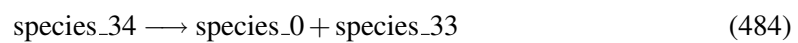
8.176 Reaction [reaction_175](#)

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

Name CaMKII dissociation from camR

SBO:0000180 dissociation

Reaction equation



Reactant

Table 356: Properties of each reactant.

Id	Name	SBO
species_34	camR.CaMKII	

Products

Table 357: Properties of each product.

Id	Name	SBO
species_0	camR	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{176} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{34}] \quad (485)$$

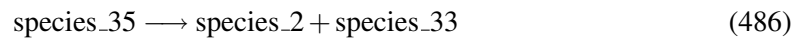
8.177 Reaction [reaction_176](#)

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

Name CaMKII dissociation from camR_cal_A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 358: Properties of each reactant.

Id	Name	SBO
species_35	camR_cal_A_CaMKII	

Products

Table 359: Properties of each product.

Id	Name	SBO
species_2	camR_cal_A	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{177} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{35}] \quad (487)$$

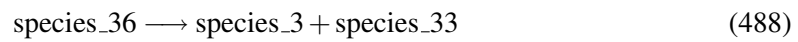
8.178 Reaction [reaction_177](#)

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

Name CaMKII dissociation from camR_cal_B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 360: Properties of each reactant.

Id	Name	SBO
species_36	camR_cal_B_CaMKII	

Products

Table 361: Properties of each product.

Id	Name	SBO
species_3	camR_cal_B	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{178} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{36}] \quad (489)$$

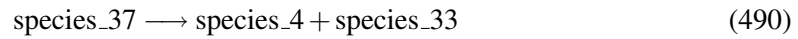
8.179 Reaction [reaction_178](#)

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

Name CaMKII dissociation from camR_cal_C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 362: Properties of each reactant.

Id	Name	SBO
species_37	camR_cal_C-CaMKII	

Products

Table 363: Properties of each product.

Id	Name	SBO
species_4	camR_cal_C	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{179} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_16} \cdot [\text{species_37}] \quad (491)$$

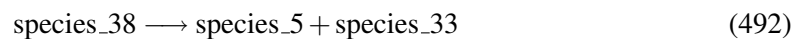
8.180 Reaction [reaction_179](#)

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

Name CaMKII dissociation from camR_cal_D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 364: Properties of each reactant.

Id	Name	SBO
species_38	camR_cal_D-CaMKII	

Products

Table 365: Properties of each product.

Id	Name	SBO
species_5	camR_ca1_D	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{180} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{38}] \quad (493)$$

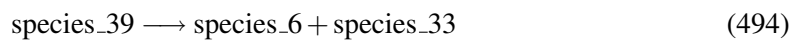
8.181 Reaction [reaction_180](#)

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

Name CaMKII dissociation from camR_ca2_AB

SBO:0000180 dissociation

Reaction equation



Reactant

Table 366: Properties of each reactant.

Id	Name	SBO
species_39	camR_ca2_AB.CaMKII	

Products

Table 367: Properties of each product.

Id	Name	SBO
species_6	camR_ca2_AB	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{181} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{39}] \quad (495)$$

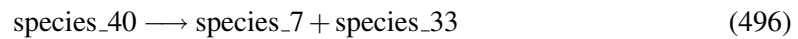
8.182 Reaction [reaction_181](#)

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

Name CaMKII dissociation from camR_ca2_AC

SBO:0000180 dissociation

Reaction equation



Reactant

Table 368: Properties of each reactant.

Id	Name	SBO
species_40	camR_ca2_AC.CaMKII	

Products

Table 369: Properties of each product.

Id	Name	SBO
species_7	camR_ca2_AC	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{182} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{40}] \quad (497)$$

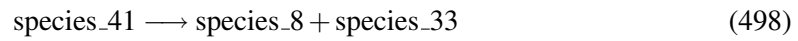
8.183 Reaction [reaction_182](#)

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

Name CaMKII dissociation from camR_ca2_AD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 370: Properties of each reactant.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	

Products

Table 371: Properties of each product.

Id	Name	SBO
species_8	camR_ca2_AD	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{183} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_16} \cdot [\text{species_41}] \quad (499)$$

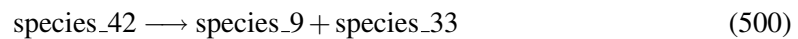
8.184 Reaction [reaction_183](#)

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

Name CaMKII dissociation from camR_ca2_BC

SBO:0000180 dissociation

Reaction equation



Reactant

Table 372: Properties of each reactant.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	

Products

Table 373: Properties of each product.

Id	Name	SBO
species_9	camR_ca2_BC	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{184} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{42}] \quad (501)$$

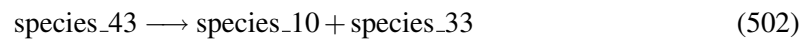
8.185 Reaction [reaction_184](#)

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

Name CaMKII dissociation from camR_ca2_BD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 374: Properties of each reactant.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	

Products

Table 375: Properties of each product.

Id	Name	SBO
species_10	camR_ca2_BD	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{185} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{43}] \quad (503)$$

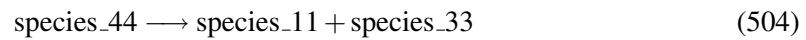
8.186 Reaction [reaction_185](#)

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

Name CaMKII dissociation from camR_ca2_CD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 376: Properties of each reactant.

Id	Name	SBO
species_44	camR_ca2_CD.CaMKII	

Products

Table 377: Properties of each product.

Id	Name	SBO
species_11	camR_ca2_CD	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{186} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{44}] \quad (505)$$

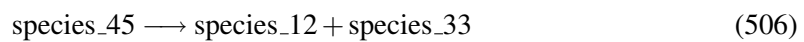
8.187 Reaction [reaction_186](#)

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

Name CaMKII dissociation from camR_ca3_ABC

SBO:0000180 dissociation

Reaction equation



Reactant

Table 378: Properties of each reactant.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	

Products

Table 379: Properties of each product.

Id	Name	SBO
species_12	camR_ca3_ABC	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{187} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{45}] \quad (507)$$

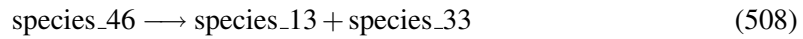
8.188 Reaction [reaction_187](#)

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

Name CaMKII dissociation from camR_ca3_ABD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 380: Properties of each reactant.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	

Products

Table 381: Properties of each product.

Id	Name	SBO
species_13	camR_ca3_ABD	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{188} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_16} \cdot [\text{species_46}] \quad (509)$$

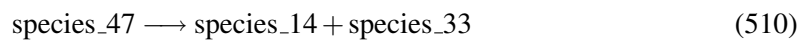
8.189 Reaction [reaction_188](#)

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

Name CaMKII dissociation from camR_ca3_ACD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 382: Properties of each reactant.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	

Products

Table 383: Properties of each product.

Id	Name	SBO
species_14	camR_ca3_ACD	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{189} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{47}] \quad (511)$$

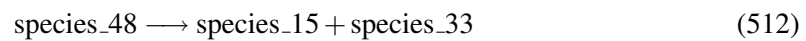
8.190 Reaction [reaction_189](#)

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

Name CaMKII dissociation from camR_ca3_BCD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 384: Properties of each reactant.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	

Products

Table 385: Properties of each product.

Id	Name	SBO
species_15	camR_ca3_BCD	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{190} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{48}] \quad (513)$$

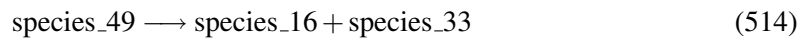
8.191 Reaction [reaction_190](#)

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

Name CaMKII dissociation from camR_ca4_ABCD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 386: Properties of each reactant.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Products

Table 387: Properties of each product.

Id	Name	SBO
species_16	camR_ca4_ABCD	
species_33	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{191} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{16} \cdot [\text{species}_{49}] \quad (515)$$

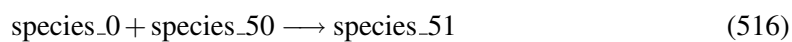
8.192 Reaction [reaction_191](#)

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

Name PP2B binding to camR

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 388: Properties of each reactant.

Id	Name	SBO
species_0	camR	
species_50	PP2B	

Product

Table 389: Properties of each product.

Id	Name	SBO
species_51	camR_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{192} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_17} \cdot [\text{species_0}] \cdot [\text{species_50}] \quad (517)$$

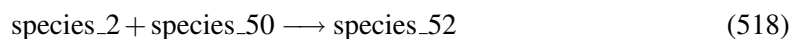
8.193 Reaction [reaction_192](#)

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

Name PP2B binding to camR_ca1_A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 390: Properties of each reactant.

Id	Name	SBO
species_2	camR_cal_A	
species_50	PP2B	

Product

Table 391: Properties of each product.

Id	Name	SBO
species_52	camR_cal_A_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{193} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_2] \cdot [\text{species}_{50}] \quad (519)$$

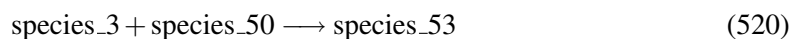
8.194 Reaction [reaction_193](#)

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

Name PP2B binding to camR_cal_B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 392: Properties of each reactant.

Id	Name	SBO
species_3	camR_cal_B	
species_50	PP2B	

Product

Table 393: Properties of each product.

Id	Name	SBO
species_53	camR_cal_B_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{194} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_3] \cdot [\text{species}_{50}] \quad (521)$$

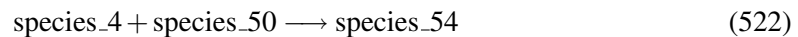
8.195 Reaction [reaction_194](#)

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

Name PP2B binding to camR_cal_C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 394: Properties of each reactant.

Id	Name	SBO
species_4	camR_cal_C	
species_50	PP2B	

Product

Table 395: Properties of each product.

Id	Name	SBO
species_54	camR_cal_C_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{195} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_4] \cdot [\text{species}_{50}] \quad (523)$$

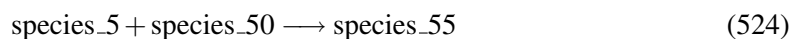
8.196 Reaction [reaction_195](#)

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

Name PP2B binding to camR_cal_D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 396: Properties of each reactant.

Id	Name	SBO
species_5	camR_cal_D	
species_50	PP2B	

Product

Table 397: Properties of each product.

Id	Name	SBO
species_55	camR_cal_D_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{196} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_17} \cdot [\text{species_5}] \cdot [\text{species_50}] \quad (525)$$

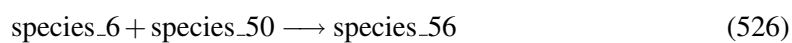
8.197 Reaction [reaction_196](#)

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

Name PP2B binding to camR_ca2_AB

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 398: Properties of each reactant.

Id	Name	SBO
species_6	camR_ca2_AB	
species_50	PP2B	

Product

Table 399: Properties of each product.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{197} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_6] \cdot [\text{species}_{50}] \quad (527)$$

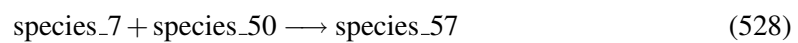
8.198 Reaction [reaction_197](#)

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

Name PP2B binding to camR_ca2_AC

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 400: Properties of each reactant.

Id	Name	SBO
species_7	camR_ca2_AC	
species_50	PP2B	

Product

Table 401: Properties of each product.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	

Kinetic Law**Derived unit** contains undeclared units

$$v_{198} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_7] \cdot [\text{species}_{50}] \quad (529)$$

8.199 Reaction [reaction_198](#)

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

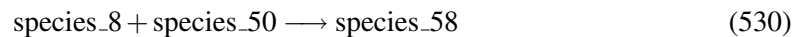
Name PP2B binding to camR_ca2_AD**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 402: Properties of each reactant.

Id	Name	SBO
species_8	camR_ca2_AD	
species_50	PP2B	

Product

Table 403: Properties of each product.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	

Kinetic Law**Derived unit** contains undeclared units

$$v_{199} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_8] \cdot [\text{species}_{50}] \quad (531)$$

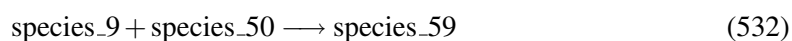
8.200 Reaction [reaction_199](#)

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

Name PP2B binding to camR_ca2_BC

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 404: Properties of each reactant.

Id	Name	SBO
species_9	camR_ca2_BC	
species_50	PP2B	

Product

Table 405: Properties of each product.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{200} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_17} \cdot [\text{species_9}] \cdot [\text{species_50}] \quad (533)$$

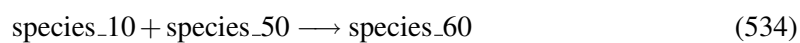
8.201 Reaction [reaction_200](#)

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

Name PP2B binding to camR_ca2_BD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 406: Properties of each reactant.

Id	Name	SBO
species_10	camR_ca2_BD	
species_50	PP2B	

Product

Table 407: Properties of each product.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{201} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_{10}] \cdot [\text{species}_{50}] \quad (535)$$

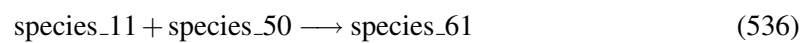
8.202 Reaction [reaction_201](#)

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

Name PP2B binding to camR_ca2_CD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 408: Properties of each reactant.

Id	Name	SBO
species_11	camR_ca2_CD	
species_50	PP2B	

Product

Table 409: Properties of each product.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{202} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_{11}] \cdot [\text{species}_{50}] \quad (537)$$

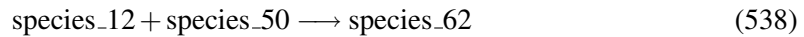
8.203 Reaction [reaction_202](#)

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

Name PP2B binding to camR_ca3_ABC

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 410: Properties of each reactant.

Id	Name	SBO
species_12	camR_ca3_ABC	
species_50	PP2B	

Product

Table 411: Properties of each product.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{203} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_{12}] \cdot [\text{species}_{50}] \quad (539)$$

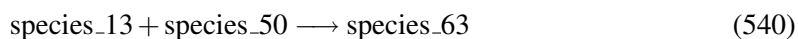
8.204 Reaction [reaction_203](#)

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

Name PP2B binding to camR_ca3_ABD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 412: Properties of each reactant.

Id	Name	SBO
species_13	camR_ca3_ABD	
species_50	PP2B	

Product

Table 413: Properties of each product.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{204} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_17} \cdot [\text{species_13}] \cdot [\text{species_50}] \quad (541)$$

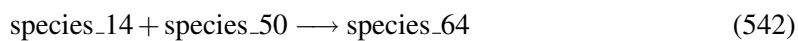
8.205 Reaction [reaction_204](#)

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

Name PP2B binding to camR_ca3_ACD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 414: Properties of each reactant.

Id	Name	SBO
species_14	camR_ca3_ACD	
species_50	PP2B	

Product

Table 415: Properties of each product.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{205} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_{14}] \cdot [\text{species}_{50}] \quad (543)$$

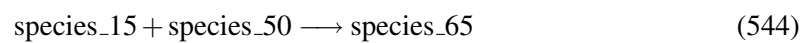
8.206 Reaction [reaction_205](#)

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

Name PP2B binding to camR_ca3_BCD

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 416: Properties of each reactant.

Id	Name	SBO
species_15	camR_ca3_BCD	
species_50	PP2B	

Product

Table 417: Properties of each product.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	

Kinetic Law**Derived unit** contains undeclared units

$$v_{206} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_{15}] \cdot [\text{species}_{50}] \quad (545)$$

8.207 Reaction [reaction_206](#)

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

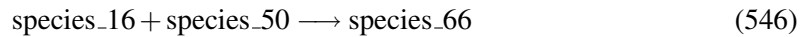
Name PP2B binding to camR_ca4_ABCD**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 418: Properties of each reactant.

Id	Name	SBO
species_16	camR_ca4_ABCD	
species_50	PP2B	

Product

Table 419: Properties of each product.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Kinetic Law**Derived unit** contains undeclared units

$$v_{207} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{17} \cdot [\text{species}_{16}] \cdot [\text{species}_{50}] \quad (547)$$

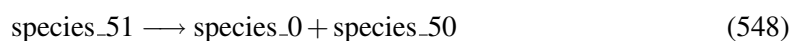
8.208 Reaction [reaction_207](#)

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

Name PP2B dissociation from camR

SBO:0000180 dissociation

Reaction equation



Reactant

Table 420: Properties of each reactant.

Id	Name	SBO
species_51	camR_PP2B	

Products

Table 421: Properties of each product.

Id	Name	SBO
species_0	camR	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{208} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_18} \cdot [\text{species_51}] \quad (549)$$

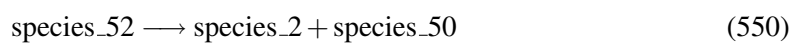
8.209 Reaction [reaction_208](#)

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

Name PP2B dissociation from camR_ca1_A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 422: Properties of each reactant.

Id	Name	SBO
species_52	camR_cal_A_PP2B	

Products

Table 423: Properties of each product.

Id	Name	SBO
species_2	camR_cal_A	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{209} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{52}] \quad (551)$$

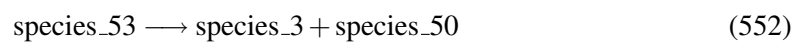
8.210 Reaction [reaction_209](#)

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

Name PP2B dissociation from camR_cal_B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 424: Properties of each reactant.

Id	Name	SBO
species_53	camR_cal_B_PP2B	

Products

Table 425: Properties of each product.

Id	Name	SBO
species_3	camR_cal_B	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{210} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{53}] \quad (553)$$

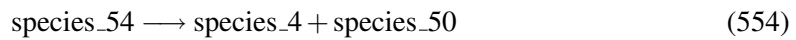
8.211 Reaction [reaction_210](#)

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

Name PP2B dissociation from camR_cal_C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 426: Properties of each reactant.

Id	Name	SBO
species_54	camR_cal_C_PP2B	

Products

Table 427: Properties of each product.

Id	Name	SBO
species_4	camR_cal_C	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{211} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{54}] \quad (555)$$

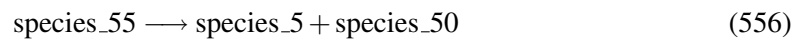
8.212 Reaction [reaction_211](#)

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

Name PP2B dissociation from camR_cal_D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 428: Properties of each reactant.

Id	Name	SBO
species_55	camR_cal_D_PP2B	

Products

Table 429: Properties of each product.

Id	Name	SBO
species_5	camR_cal_D	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{212} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{55}] \quad (557)$$

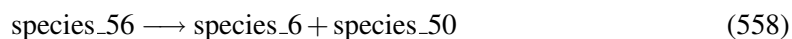
8.213 Reaction [reaction_212](#)

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

Name PP2B dissociation from camR_ca2_AB

SBO:0000180 dissociation

Reaction equation



Reactant

Table 430: Properties of each reactant.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	

Products

Table 431: Properties of each product.

Id	Name	SBO
species_6	camR_ca2_AB	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{213} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_18} \cdot [\text{species_56}] \quad (559)$$

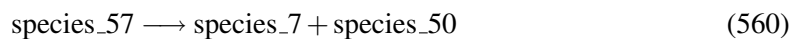
8.214 Reaction [reaction_213](#)

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

Name PP2B dissociation from camR_ca2_AC

SBO:0000180 dissociation

Reaction equation



Reactant

Table 432: Properties of each reactant.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	

Products

Table 433: Properties of each product.

Id	Name	SBO
species_7	camR_ca2_AC	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{214} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{57}] \quad (561)$$

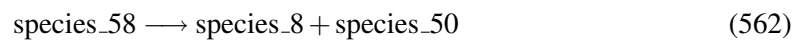
8.215 Reaction [reaction_214](#)

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

Name PP2B dissociation from camR_ca2_AD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 434: Properties of each reactant.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	

Products

Table 435: Properties of each product.

Id	Name	SBO
species_8	camR_ca2_AD	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{215} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{58}] \quad (563)$$

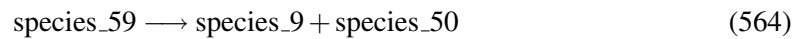
8.216 Reaction [reaction_215](#)

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

Name PP2B dissociation from camR_ca2_BC

SBO:0000180 dissociation

Reaction equation



Reactant

Table 436: Properties of each reactant.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	

Products

Table 437: Properties of each product.

Id	Name	SBO
species_9	camR_ca2_BC	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{216} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{59}] \quad (565)$$

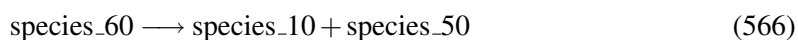
8.217 Reaction [reaction_216](#)

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

Name PP2B dissociation from camR_ca2_BD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 438: Properties of each reactant.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	

Products

Table 439: Properties of each product.

Id	Name	SBO
species_10	camR_ca2_BD	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{217} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_18} \cdot [\text{species_60}] \quad (567)$$

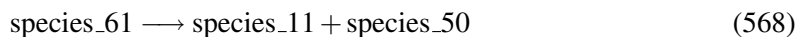
8.218 Reaction [reaction_217](#)

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

Name PP2B dissociation from camR_ca2_CD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 440: Properties of each reactant.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	

Products

Table 441: Properties of each product.

Id	Name	SBO
species_11	camR_ca2_CD	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{218} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{61}] \quad (569)$$

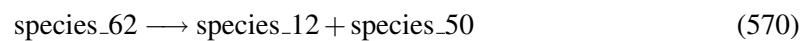
8.219 Reaction `reaction_218`

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

Name PP2B dissociation from camR_ca3_ABC

SBO:0000180 dissociation

Reaction equation



Reactant

Table 442: Properties of each reactant.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	

Products

Table 443: Properties of each product.

Id	Name	SBO
species_12	camR_ca3_ABC	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{219} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{62}] \quad (571)$$

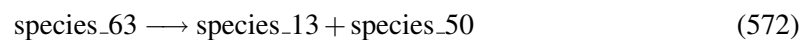
8.220 Reaction [reaction_219](#)

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

Name PP2B dissociation from camR_ca3_ABD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 444: Properties of each reactant.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	

Products

Table 445: Properties of each product.

Id	Name	SBO
species_13	camR_ca3_ABD	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{220} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{63}] \quad (573)$$

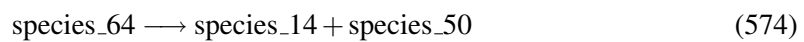
8.221 Reaction [reaction_220](#)

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

Name PP2B dissociation from camR.ca3_ACD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 446: Properties of each reactant.

Id	Name	SBO
<code>species_64</code>	camR.ca3_ACD_PP2B	

Products

Table 447: Properties of each product.

Id	Name	SBO
<code>species_14</code>	camR.ca3_ACD	
<code>species_50</code>	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{221} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{64}] \quad (575)$$

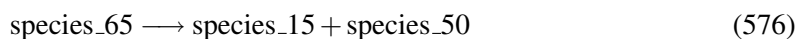
8.222 Reaction [reaction_221](#)

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

Name PP2B dissociation from camR.ca3_BCD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 448: Properties of each reactant.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	

Products

Table 449: Properties of each product.

Id	Name	SBO
species_15	camR_ca3_BCD	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{222} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_18} \cdot [\text{species_65}] \quad (577)$$

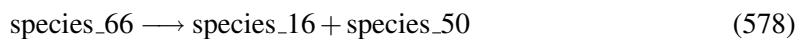
8.223 Reaction [reaction_222](#)

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

Name PP2B dissociation from camR_ca4_ABCD

SBO:0000180 dissociation

Reaction equation



Reactant

Table 450: Properties of each reactant.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Products

Table 451: Properties of each product.

Id	Name	SBO
species_16	camR_ca4_ABCD	
species_50	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{223} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_{18} \cdot [\text{species}_{66}] \quad (579)$$

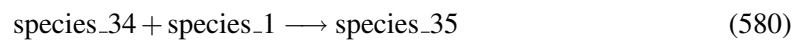
8.224 Reaction [reaction_223](#)

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

Name Ca binding to camR-CaMKII site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 452: Properties of each reactant.

Id	Name	SBO
species_34	camR-CaMKII	
species_1	ca	

Product

Table 453: Properties of each product.

Id	Name	SBO
species_35	camR_ca1_A-CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{224} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{34}] \cdot [\text{species}_1] \quad (581)$$

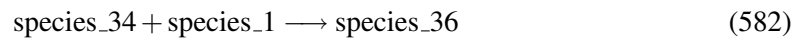
8.225 Reaction [reaction_224](#)

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

Name Ca binding to camR_CaMKII site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 454: Properties of each reactant.

Id	Name	SBO
species_34	camR_CaMKII	
species_1	ca	

Product

Table 455: Properties of each product.

Id	Name	SBO
species_36	camR_ca1_B_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{225} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{34}] \cdot [\text{species}_1] \quad (583)$$

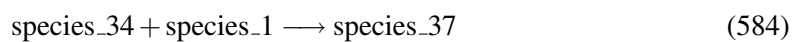
8.226 Reaction [reaction_225](#)

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

Name Ca binding to camR_CaMKII site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 456: Properties of each reactant.

Id	Name	SBO
species_34	camR_CaMKII	
species_1	ca	

Product

Table 457: Properties of each product.

Id	Name	SBO
species_37	camR_cal_C_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{226} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_34}] \cdot [\text{species_1}] \quad (585)$$

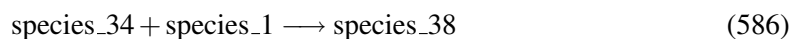
8.227 Reaction [reaction_226](#)

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

Name Ca binding to camR_CaMKII site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 458: Properties of each reactant.

Id	Name	SBO
species_34	camR_CaMKII	
species_1	ca	

Product

Table 459: Properties of each product.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{227} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_34] \cdot [\text{species}_1] \quad (587)$$

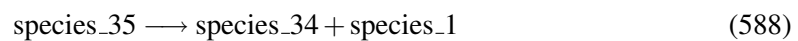
8.228 Reaction [reaction_227](#)

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

Name Ca dissociation from camR_ca1_CaMKII site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 460: Properties of each reactant.

Id	Name	SBO
species_35	camR_ca1_A_CaMKII	

Products

Table 461: Properties of each product.

Id	Name	SBO
species_34	camR_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{228} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{35}] \quad (589)$$

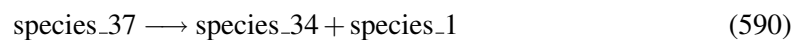
8.229 Reaction [reaction_228](#)

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

Name Ca dissociation from camR_ca1_CaMKII site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 462: Properties of each reactant.

Id	Name	SBO
species_37	camR_ca1_C_CaMKII	

Products

Table 463: Properties of each product.

Id	Name	SBO
species_34	camR_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{229} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{37}] \quad (591)$$

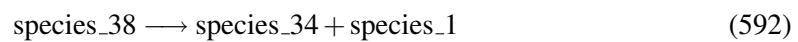
8.230 Reaction [reaction_229](#)

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

Name Ca dissociation from camR_ca1_CaMKII site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 464: Properties of each reactant.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	

Products

Table 465: Properties of each product.

Id	Name	SBO
species_34	camR_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{230} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{38}] \quad (593)$$

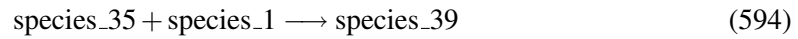
8.231 Reaction [reaction_230](#)

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

Name Ca binding to camR_ca1_A_CaMKII site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 466: Properties of each reactant.

Id	Name	SBO
species_35	camR_ca1_A_CaMKII	
species_1	ca	

Product

Table 467: Properties of each product.

Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{231} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_35}] \cdot [\text{species_1}] \quad (595)$$

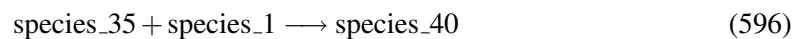
8.232 Reaction [reaction_231](#)

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

Name Ca binding to camR_ca1_A_CaMKII site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 468: Properties of each reactant.

Id	Name	SBO
species_35	camR_ca1_A_CaMKII	
species_1	ca	

Product

Table 469: Properties of each product.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{232} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{35}] \cdot [\text{species}_1] \quad (597)$$

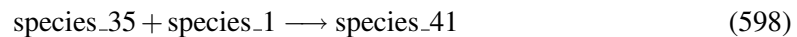
8.233 Reaction [reaction_232](#)

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

Name Ca binding to camR_ca1_A_CaMKII site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 470: Properties of each reactant.

Id	Name	SBO
species_35	camR_ca1_A_CaMKII	
species_1	ca	

Product

Table 471: Properties of each product.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{233} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{35}] \cdot [\text{species}_1] \quad (599)$$

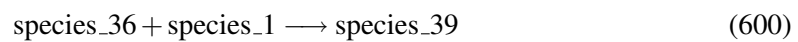
8.234 Reaction [reaction_233](#)

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

Name Ca binding to camR_ca1_B_CaMKII site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 472: Properties of each reactant.

Id	Name	SBO
species_36	camR_ca1_B_CaMKII	
species_1	ca	

Product

Table 473: Properties of each product.

Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{234} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{36}] \cdot [\text{species}_1] \quad (601)$$

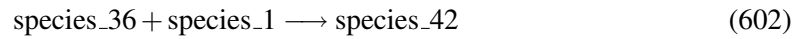
8.235 Reaction [reaction_234](#)

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

Name Ca binding to camR_ca1_B_CaMKII site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 474: Properties of each reactant.

Id	Name	SBO
species_36	camR_ca1_B_CaMKII	
species_1	ca	

Product

Table 475: Properties of each product.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{235} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_36}] \cdot [\text{species_1}] \quad (603)$$

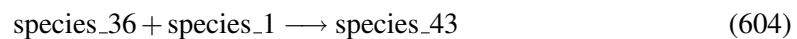
8.236 Reaction [reaction_235](#)

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

Name Ca binding to camR_ca1_B_CaMKII site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 476: Properties of each reactant.

Id	Name	SBO
species_36	camR_ca1_B_CaMKII	
species_1	ca	

Product

Table 477: Properties of each product.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{236} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{36}] \cdot [\text{species}_1] \quad (605)$$

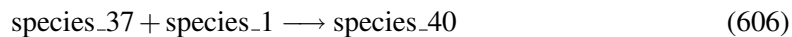
8.237 Reaction [reaction_236](#)

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

Name Ca binding to camR_ca1_C_CaMKII site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 478: Properties of each reactant.

Id	Name	SBO
species_37	camR_ca1_C_CaMKII	
species_1	ca	

Product

Table 479: Properties of each product.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{237} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{37}] \cdot [\text{species}_1] \quad (607)$$

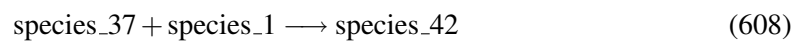
8.238 Reaction [reaction_237](#)

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

Name Ca binding to camR_ca1_C_CaMKII site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 480: Properties of each reactant.

Id	Name	SBO
species_37	camR_ca1_C_CaMKII	
species_1	ca	

Product

Table 481: Properties of each product.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{238} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{37}] \cdot [\text{species}_1] \quad (609)$$

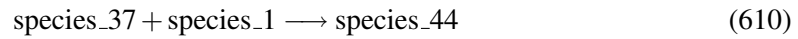
8.239 Reaction [reaction_238](#)

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

Name Ca binding to camR_ca1_C_CaMKII site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 482: Properties of each reactant.

Id	Name	SBO
species_37	camR_ca1_C_CaMKII	
species_1	ca	

Product

Table 483: Properties of each product.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{239} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_37}] \cdot [\text{species_1}] \quad (611)$$

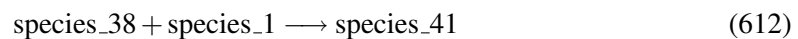
8.240 Reaction [reaction_239](#)

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

Name Ca binding to camR_ca1_D_CaMKII site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 484: Properties of each reactant.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	
species_1	ca	

Product

Table 485: Properties of each product.

Id	Name	SBO
species_41	camR_ca2_AD.CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{240} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{38}] \cdot [\text{species}_1] \quad (613)$$

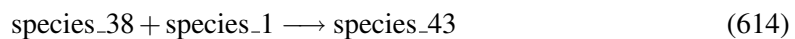
8.241 Reaction [reaction_240](#)

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

Name Ca binding to camR_ca1_D_CaMKII site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 486: Properties of each reactant.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	
species_1	ca	

Product

Table 487: Properties of each product.

Id	Name	SBO
species_43	camR_ca2_BD.CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{241} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{38}] \cdot [\text{species}_1] \quad (615)$$

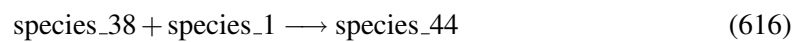
8.242 Reaction [reaction_241](#)

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

Name Ca binding to camR_ca1_D_CaMKII site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 488: Properties of each reactant.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	
species_1	ca	

Product

Table 489: Properties of each product.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{242} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{38}] \cdot [\text{species}_1] \quad (617)$$

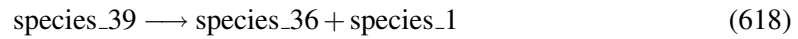
8.243 Reaction [reaction_242](#)

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

Name Ca dissociation from camR_ca2_AB_CaMKII site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 490: Properties of each reactant.

Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	

Products

Table 491: Properties of each product.

Id	Name	SBO
species_36	camR_cal_B_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{243} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_1} \cdot [\text{species_39}] \quad (619)$$

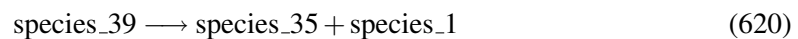
8.244 Reaction [reaction_243](#)

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

Name Ca dissociation from camR_ca2_AB_CaMKII site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 492: Properties of each reactant.

Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	

Products

Table 493: Properties of each product.

Id	Name	SBO
species_35	camR_ca1_A_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{244} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{39}] \quad (621)$$

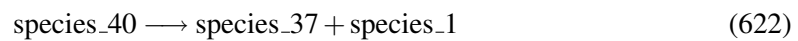
8.245 Reaction [reaction_244](#)

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

Name Ca dissociation from camR_ca2_AC_CaMKII site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 494: Properties of each reactant.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	

Products

Table 495: Properties of each product.

Id	Name	SBO
species_37	camR_ca1_C_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{245} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{40}] \quad (623)$$

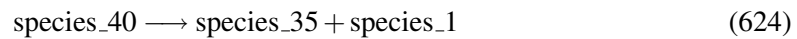
8.246 Reaction [reaction_245](#)

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

Name Ca dissociation from camR_ca2_AC_CaMKII site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 496: Properties of each reactant.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	

Products

Table 497: Properties of each product.

Id	Name	SBO
species_35	camR_ca1_A_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{246} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{40}] \quad (625)$$

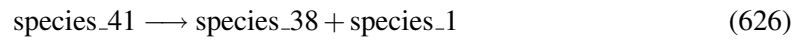
8.247 Reaction [reaction_246](#)

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

Name Ca dissociation from camR_ca2_AD_CaMKII site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 498: Properties of each reactant.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	

Products

Table 499: Properties of each product.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{247} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_1} \cdot [\text{species_41}] \quad (627)$$

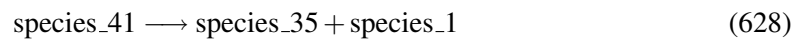
8.248 Reaction [reaction_247](#)

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

Name Ca dissociation from camR_ca2_AD_CaMKII site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 500: Properties of each reactant.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	

Products

Table 501: Properties of each product.

Id	Name	SBO
species_35	camR_ca1_A_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{248} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{41}] \quad (629)$$

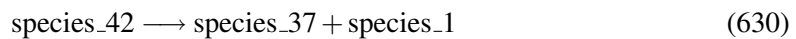
8.249 Reaction [reaction_248](#)

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

Name Ca dissociation from camR_ca2_BC_CaMKII site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 502: Properties of each reactant.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	

Products

Table 503: Properties of each product.

Id	Name	SBO
species_37	camR_ca1_C_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{249} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{42}] \quad (631)$$

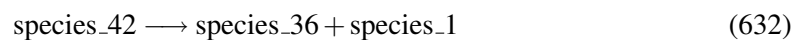
8.250 Reaction [reaction_249](#)

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

Name Ca dissociation from camR_ca2_BC_CaMKII site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 504: Properties of each reactant.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	

Products

Table 505: Properties of each product.

Id	Name	SBO
species_36	camR_ca1_B_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{250} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{42}] \quad (633)$$

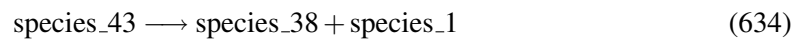
8.251 Reaction [reaction_250](#)

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

Name Ca dissociation from camR_ca2_BD_CaMKII site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 506: Properties of each reactant.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	

Products

Table 507: Properties of each product.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{251} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{43}] \quad (635)$$

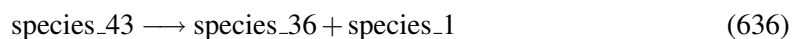
8.252 Reaction [reaction_251](#)

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

Name Ca dissociation from camR_ca2_BD_CaMKII site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 508: Properties of each reactant.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	

Products

Table 509: Properties of each product.

Id	Name	SBO
species_36	camR_cal_B_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{252} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_4} \cdot [\text{species_43}] \quad (637)$$

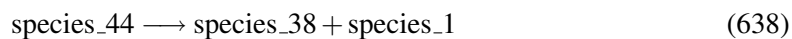
8.253 Reaction [reaction_252](#)

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

Name Ca dissociation from camR_ca2_CD_CaMKII site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 510: Properties of each reactant.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	

Products

Table 511: Properties of each product.

Id	Name	SBO
species_38	camR_ca1_D_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{253} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{44}] \quad (639)$$

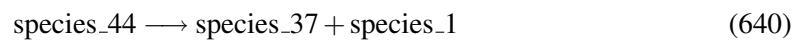
8.254 Reaction [reaction_253](#)

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

Name Ca dissociation from camR_ca2_CD_CaMKII site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 512: Properties of each reactant.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	

Products

Table 513: Properties of each product.

Id	Name	SBO
species_37	camR_ca1_C_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{254} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{44}] \quad (641)$$

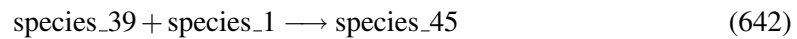
8.255 Reaction [reaction_254](#)

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

Name Ca binding to camR_ca2_AB_CaMKII site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 514: Properties of each reactant.

Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	
species_1	ca	

Product

Table 515: Properties of each product.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{255} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{39}] \cdot [\text{species}_1] \quad (643)$$

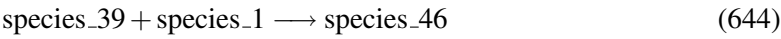
8.256 Reaction [reaction_255](#)

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

Name Ca binding to camR_ca2_AB_CaMKII site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 516: Properties of each reactant.		
Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	
species_1	ca	

Product

Table 517: Properties of each product.		
Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{256} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_39}] \cdot [\text{species_1}] \tag{645}$$

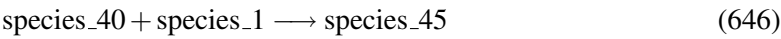
8.257 Reaction [reaction_256](#)

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

Name Ca binding to camR_ca2_AC_CaMKII site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 518: Properties of each reactant.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	
species_1	ca	

Product

Table 519: Properties of each product.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{257} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_40] \cdot [\text{species}_1] \quad (647)$$

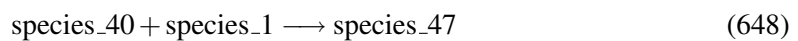
8.258 Reaction [reaction_257](#)

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

Name Ca binding to camR_ca2_AC_CaMKII site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 520: Properties of each reactant.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	
species_1	ca	

Product

Table 521: Properties of each product.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{258} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{40}] \cdot [\text{species}_1] \quad (649)$$

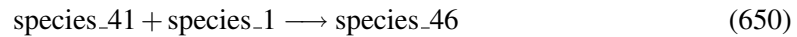
8.259 Reaction reaction_258

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

Name Ca binding to camR_ca2_AD_CaMKII site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 522: Properties of each reactant.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	
species_1	ca	

Product

Table 523: Properties of each product.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{259} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{41}] \cdot [\text{species}_1] \quad (651)$$

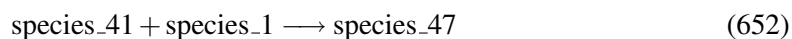
8.260 Reaction [reaction_259](#)

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

Name Ca binding to camR_ca2_AD_CaMKII site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 524: Properties of each reactant.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	
species_1	ca	

Product

Table 525: Properties of each product.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{260} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_41}] \cdot [\text{species_1}] \quad (653)$$

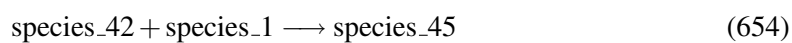
8.261 Reaction [reaction_260](#)

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

Name Ca binding to camR_ca2_BC_CaMKII site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 526: Properties of each reactant.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	
species_1	ca	

Product

Table 527: Properties of each product.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{261} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_42] \cdot [\text{species}_1] \quad (655)$$

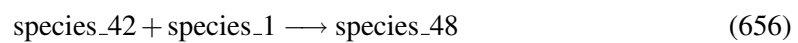
8.262 Reaction [reaction_261](#)

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

Name Ca binding to camR_ca2_BC_CaMKII site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 528: Properties of each reactant.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	
species_1	ca	

Product

Table 529: Properties of each product.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{262} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{42}] \cdot [\text{species}_1] \quad (657)$$

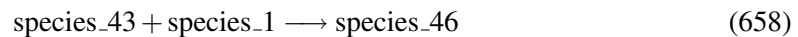
8.263 Reaction [reaction_262](#)

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

Name Ca binding to camR_ca2_BD_CaMKII site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 530: Properties of each reactant.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	
species_1	ca	

Product

Table 531: Properties of each product.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{263} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{43}] \cdot [\text{species}_1] \quad (659)$$

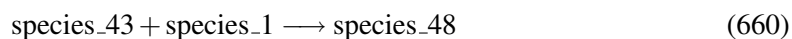
8.264 Reaction [reaction_263](#)

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

Name Ca binding to camR_ca2_BD_CaMKII site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 532: Properties of each reactant.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	
species_1	ca	

Product

Table 533: Properties of each product.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{264} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_43}] \cdot [\text{species_1}] \quad (661)$$

8.265 Reaction [reaction_264](#)

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

Name Ca binding to camR_ca2_CD_CaMKII site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 534: Properties of each reactant.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	
species_1	ca	

Product

Table 535: Properties of each product.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{265} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_44] \cdot [\text{species}_1] \quad (663)$$

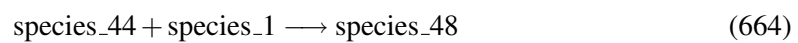
8.266 Reaction [reaction_265](#)

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

Name Ca binding to camR_ca2_CD_CaMKII site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 536: Properties of each reactant.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	
species_1	ca	

Product

Table 537: Properties of each product.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	

Kinetic Law**Derived unit** contains undeclared units

$$v_{266} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{44}] \cdot [\text{species}_1] \quad (665)$$

8.267 Reaction `reaction_266`

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

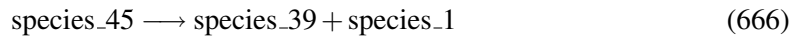
Name Ca dissociation from camR_ca3_ABC_CaMKII site C**SBO:0000180** dissociation**Reaction equation****Reactant**

Table 538: Properties of each reactant.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	

Products

Table 539: Properties of each product.

Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	
species_1	ca	

Kinetic Law**Derived unit** contains undeclared units

$$v_{267} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{45}] \quad (667)$$

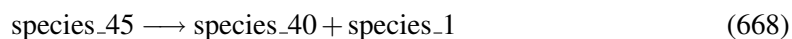
8.268 Reaction [reaction_267](#)

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

Name Ca dissociation from camR_ca3_ABC_CaMKII site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 540: Properties of each reactant.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	

Products

Table 541: Properties of each product.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{268} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_2} \cdot [\text{species_45}] \quad (669)$$

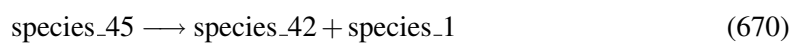
8.269 Reaction [reaction_268](#)

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

Name Ca dissociation from camR_ca3_ABC_CaMKII site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 542: Properties of each reactant.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	

Products

Table 543: Properties of each product.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{269} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{45}] \quad (671)$$

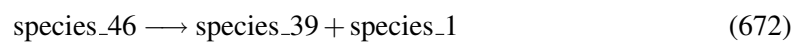
8.270 Reaction [reaction_269](#)

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

Name Ca dissociation from camR_ca3_ABD_CaMKII site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 544: Properties of each reactant.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	

Products

Table 545: Properties of each product.

Id	Name	SBO
species_39	camR_ca2_AB_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{270} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{46}] \quad (673)$$

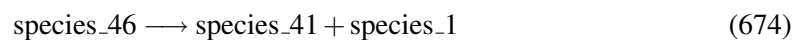
8.271 Reaction [reaction_270](#)

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

Name Ca dissociation from camR_ca3_ABD_CaMKII site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 546: Properties of each reactant.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	

Products

Table 547: Properties of each product.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{271} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{46}] \quad (675)$$

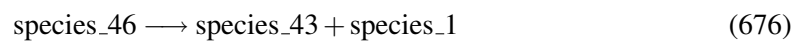
8.272 Reaction [reaction_271](#)

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

Name Ca dissociation from camR_ca3_ABD_CaMKII site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 548: Properties of each reactant.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	

Products

Table 549: Properties of each product.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{272} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{46}] \quad (677)$$

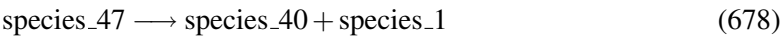
8.273 Reaction [reaction_272](#)

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

Name Ca dissociation from camR_ca3_ACD_CaMKII site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 550: Properties of each reactant.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	

Products

Table 551: Properties of each product.

Id	Name	SBO
species_40	camR_ca2_AC_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{273} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_4} \cdot [\text{species_47}]$$

(679)

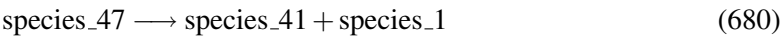
8.274 Reaction [reaction_273](#)

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

Name Ca dissociation from camR_ca3_ACD_CaMKII site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 552: Properties of each reactant.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	

Products

Table 553: Properties of each product.

Id	Name	SBO
species_41	camR_ca2_AD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{274} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{47}] \quad (681)$$

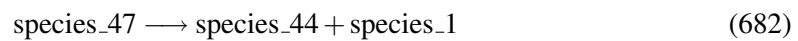
8.275 Reaction [reaction_274](#)

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

Name Ca dissociation from camR_ca3_ACD_CaMKII site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 554: Properties of each reactant.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	

Products

Table 555: Properties of each product.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{275} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{47}] \quad (683)$$

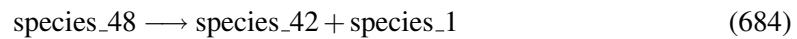
8.276 Reaction [reaction_275](#)

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

Name Ca dissociation from camR_ca3_BCD_CaMKII site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 556: Properties of each reactant.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	

Products

Table 557: Properties of each product.

Id	Name	SBO
species_42	camR_ca2_BC_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{276} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{48}] \quad (685)$$

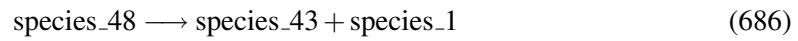
8.277 Reaction [reaction_276](#)

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

Name Ca dissociation from camR_ca3_BCD_CaMKII site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 558: Properties of each reactant.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	

Products

Table 559: Properties of each product.

Id	Name	SBO
species_43	camR_ca2_BD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{277} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_3} \cdot [\text{species_48}] \quad (687)$$

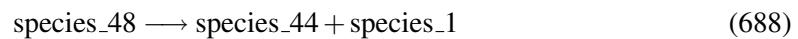
8.278 Reaction [reaction_277](#)

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

Name Ca dissociation from camR_ca3_BCD_CaMKII site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 560: Properties of each reactant.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	

Products

Table 561: Properties of each product.

Id	Name	SBO
species_44	camR_ca2_CD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{278} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{48}] \quad (689)$$

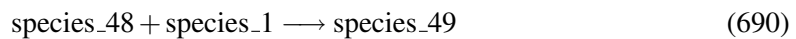
8.279 Reaction [reaction_278](#)

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

Name Ca binding to camR_ca3_BCD_CaMKII site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 562: Properties of each reactant.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	
species_1	ca	

Product

Table 563: Properties of each product.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Kinetic Law**Derived unit** contains undeclared units

$$v_{279} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_48] \cdot [\text{species}_1] \quad (691)$$

8.280 Reaction [reaction_279](#)

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

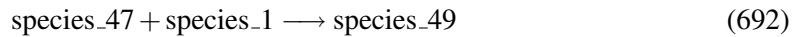
Name Ca binding to camR_ca3_ACD_CaMKII site B**SBO:0000177** non-covalent binding**Reaction equation****Reactants**

Table 564: Properties of each reactant.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	
species_1	ca	

Product

Table 565: Properties of each product.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Kinetic Law**Derived unit** contains undeclared units

$$v_{280} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_47] \cdot [\text{species}_1] \quad (693)$$

8.281 Reaction [reaction_280](#)

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

Name Ca binding to camR_ca3_ABD_CaMKII site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 566: Properties of each reactant.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	
species_1	ca	

Product

Table 567: Properties of each product.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{281} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_46}] \cdot [\text{species_1}] \quad (695)$$

8.282 Reaction [reaction_281](#)

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

Name Ca binding to camR_ca3_ABC_CaMKII site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 568: Properties of each reactant.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	
species_1	ca	

Product

Table 569: Properties of each product.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{282} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_45] \cdot [\text{species}_1] \quad (697)$$

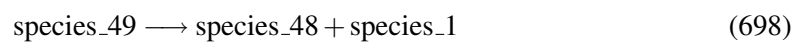
8.283 Reaction [reaction_282](#)

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

Name Ca dissociation from camR_ca4_ABCD_CaMKII site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 570: Properties of each reactant.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Products

Table 571: Properties of each product.

Id	Name	SBO
species_48	camR_ca3_BCD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{283} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{49}] \quad (699)$$

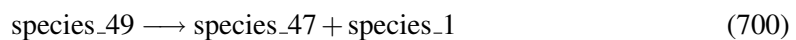
8.284 Reaction [reaction_283](#)

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

Name Ca dissociation from camR_ca4_ABCD_CaMKII site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 572: Properties of each reactant.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Products

Table 573: Properties of each product.

Id	Name	SBO
species_47	camR_ca3_ACD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{284} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{49}] \quad (701)$$

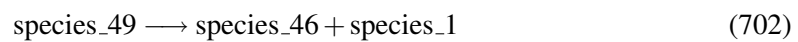
8.285 Reaction [reaction_284](#)

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

Name Ca dissociation from camR_ca4_ABCD_CaMKII site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 574: Properties of each reactant.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Products

Table 575: Properties of each product.

Id	Name	SBO
species_46	camR_ca3_ABD_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{285} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{49}] \quad (703)$$

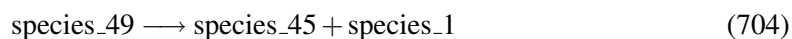
8.286 Reaction [reaction_285](#)

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

Name Ca dissociation from camR_ca4_ABCD_CaMKII site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 576: Properties of each reactant.

Id	Name	SBO
species_49	camR_ca4_ABCD_CaMKII	

Products

Table 577: Properties of each product.

Id	Name	SBO
species_45	camR_ca3_ABC_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{286} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_4} \cdot [\text{species_49}] \quad (705)$$

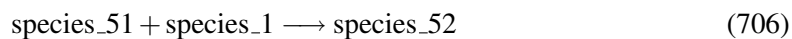
8.287 Reaction [reaction_286](#)

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

Name Ca binding to camR_PP2B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 578: Properties of each reactant.

Id	Name	SBO
species_51	camR_PP2B	
species_1	ca	

Product

Table 579: Properties of each product.

Id	Name	SBO
species_52	camR_cal_A_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{287} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{51}] \cdot [\text{species}_1] \quad (707)$$

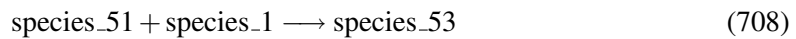
8.288 Reaction [reaction_287](#)

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

Name Ca binding to camR_PP2B site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 580: Properties of each reactant.

Id	Name	SBO
species_51	camR_PP2B	
species_1	ca	

Product

Table 581: Properties of each product.

Id	Name	SBO
species_53	camR_cal_B_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{288} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{51}] \cdot [\text{species}_1] \quad (709)$$

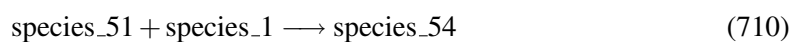
8.289 Reaction [reaction_288](#)

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

Name Ca binding to camR_PP2B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 582: Properties of each reactant.

Id	Name	SBO
species_51	camR_PP2B	
species_1	ca	

Product

Table 583: Properties of each product.

Id	Name	SBO
species_54	camR_cal_C_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{289} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{51}] \cdot [\text{species}_1] \quad (711)$$

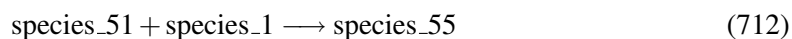
8.290 Reaction [reaction_289](#)

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

Name Ca binding to camR_PP2B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 584: Properties of each reactant.

Id	Name	SBO
species_51	camR_PP2B	
species_1	ca	

Product

Table 585: Properties of each product.

Id	Name	SBO
species_55	camR_cal_D_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{290} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_51}] \cdot [\text{species_1}] \quad (713)$$

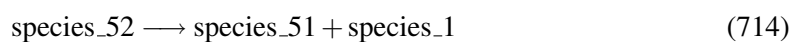
8.291 Reaction [reaction_290](#)

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

Name Ca dissociation from camR_cal_A_PP2B site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 586: Properties of each reactant.

Id	Name	SBO
species_52	camR_cal_A_PP2B	

Products

Table 587: Properties of each product.

Id	Name	SBO
species_51	camR_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{291} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{52}] \quad (715)$$

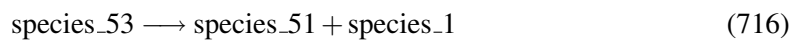
8.292 Reaction [reaction_291](#)

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

Name Ca dissociation from camR_ca1_B_PP2B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 588: Properties of each reactant.

Id	Name	SBO
species_53	camR_ca1_B_PP2B	

Products

Table 589: Properties of each product.

Id	Name	SBO
species_51	camR_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{292} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{53}] \quad (717)$$

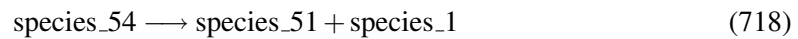
8.293 Reaction [reaction_292](#)

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

Name Ca dissociation from camR_ca1_C_PP2B site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 590: Properties of each reactant.

Id	Name	SBO
species_54	camR_ca1_C_PP2B	

Products

Table 591: Properties of each product.

Id	Name	SBO
species_51	camR_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{293} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{54}] \quad (719)$$

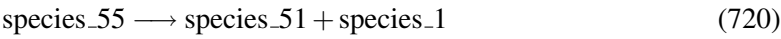
8.294 Reaction [reaction_293](#)

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

Name Ca dissociation from camR_ca1_D_PP2B site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 592: Properties of each reactant.

Id	Name	SBO
species_55	camR_cal_D_PP2B	

Products

Table 593: Properties of each product.

Id	Name	SBO
species_51	camR_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{294} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species_55}]$$

(721)

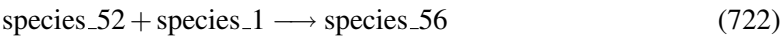
8.295 Reaction [reaction_294](#)

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

Name Ca binding to camR_cal_A_PP2B site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 594: Properties of each reactant.

Id	Name	SBO
species_52	camR_ca1_A_PP2B	
species_1	ca	

Product

Table 595: Properties of each product.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{295} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_52] \cdot [\text{species}_1] \quad (723)$$

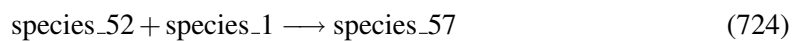
8.296 Reaction [reaction_295](#)

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

Name Ca binding to camR_ca1_A_PP2B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 596: Properties of each reactant.

Id	Name	SBO
species_52	camR_ca1_A_PP2B	
species_1	ca	

Product

Table 597: Properties of each product.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{296} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{52}] \cdot [\text{species}_1] \quad (725)$$

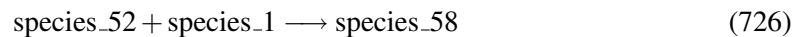
8.297 Reaction [reaction_296](#)

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

Name Ca binding to camR_ca1_A_PP2B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 598: Properties of each reactant.

Id	Name	SBO
species_52	camR_ca1_A_PP2B	
species_1	ca	

Product

Table 599: Properties of each product.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{297} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{52}] \cdot [\text{species}_1] \quad (727)$$

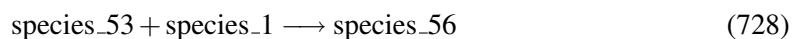
8.298 Reaction [reaction_297](#)

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

Name Ca binding to camR_cal_B_PP2B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 600: Properties of each reactant.

Id	Name	SBO
species_53	camR_cal_B_PP2B	
species_1	ca	

Product

Table 601: Properties of each product.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{298} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_53}] \cdot [\text{species_1}] \quad (729)$$

8.299 Reaction [reaction_298](#)

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

Name Ca binding to camR_cal_B_PP2B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 602: Properties of each reactant.

Id	Name	SBO
species_53	camR_ca1_B_PP2B	
species_1	ca	

Product

Table 603: Properties of each product.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{299} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_53] \cdot [\text{species}_1] \quad (731)$$

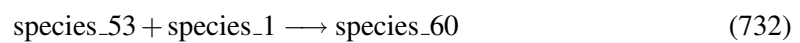
8.300 Reaction [reaction_299](#)

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

Name Ca binding to camR_ca1_B_PP2B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 604: Properties of each reactant.

Id	Name	SBO
species_53	camR_ca1_B_PP2B	
species_1	ca	

Product

Table 605: Properties of each product.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{300} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{53}] \cdot [\text{species}_1] \quad (733)$$

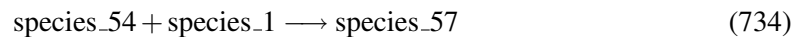
8.301 Reaction [reaction_300](#)

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

Name Ca binding to camR_ca1_C_PP2B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 606: Properties of each reactant.

Id	Name	SBO
species_54	camR_ca1_C_PP2B	
species_1	ca	

Product

Table 607: Properties of each product.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{301} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{54}] \cdot [\text{species}_1] \quad (735)$$

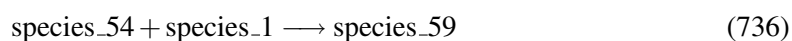
8.302 Reaction [reaction_301](#)

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

Name Ca binding to camR_cal_C_PP2B site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 608: Properties of each reactant.

Id	Name	SBO
species_54	camR_cal_C_PP2B	
species_1	ca	

Product

Table 609: Properties of each product.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{302} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_54}] \cdot [\text{species_1}] \quad (737)$$

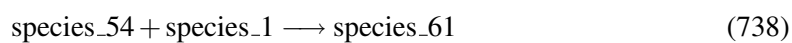
8.303 Reaction [reaction_302](#)

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

Name Ca binding to camR_cal_C_PP2B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 610: Properties of each reactant.

Id	Name	SBO
species_54	camR_ca1_C_PP2B	
species_1	ca	

Product

Table 611: Properties of each product.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{303} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_54] \cdot [\text{species}_1] \quad (739)$$

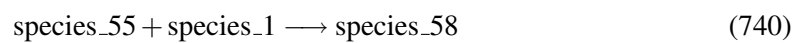
8.304 Reaction [reaction_303](#)

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

Name Ca binding to camR_ca1_D_PP2B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 612: Properties of each reactant.

Id	Name	SBO
species_55	camR_ca1_D_PP2B	
species_1	ca	

Product

Table 613: Properties of each product.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{304} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{55}] \cdot [\text{species}_1] \quad (741)$$

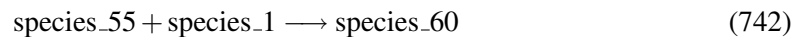
8.305 Reaction [reaction_304](#)

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

Name Ca binding to camR_ca1_D_PP2B site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 614: Properties of each reactant.

Id	Name	SBO
species_55	camR_ca1_D_PP2B	
species_1	ca	

Product

Table 615: Properties of each product.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{305} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{55}] \cdot [\text{species}_1] \quad (743)$$

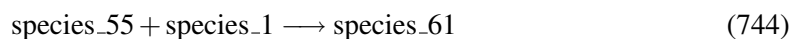
8.306 Reaction [reaction_305](#)

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

Name Ca binding to camR_cal_D_PP2B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 616: Properties of each reactant.

Id	Name	SBO
species_55	camR_cal_D_PP2B	
species_1	ca	

Product

Table 617: Properties of each product.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{306} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_55}] \cdot [\text{species_1}] \quad (745)$$

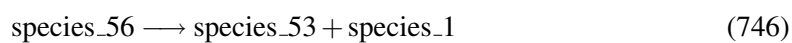
8.307 Reaction [reaction_306](#)

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

Name Ca dissociating from camR_ca2_AB_PP2B site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 618: Properties of each reactant.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	

Products

Table 619: Properties of each product.

Id	Name	SBO
species_53	camR_ca1_B_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{307} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_56] \quad (747)$$

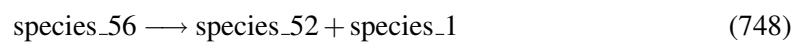
8.308 Reaction [reaction_307](#)

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

Name Ca dissociating from camR_ca2_AB_PP2B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 620: Properties of each reactant.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	

Products

Table 621: Properties of each product.

Id	Name	SBO
species_52	camR_ca1_A_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{308} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{56}] \quad (749)$$

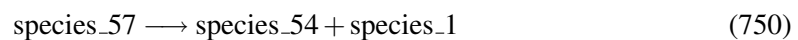
8.309 Reaction [reaction_308](#)

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

Name Ca dissociating from camR_ca2_AC_PP2B site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 622: Properties of each reactant.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	

Products

Table 623: Properties of each product.

Id	Name	SBO
species_54	camR_ca1_C_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{309} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{57}] \quad (751)$$

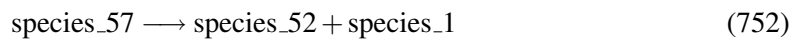
8.310 Reaction [reaction_309](#)

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

Name Ca dissociating from camR_ca2_AC_PP2B site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 624: Properties of each reactant.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	

Products

Table 625: Properties of each product.

Id	Name	SBO
species_52	camR_ca1_A_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{310} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{57}] \quad (753)$$

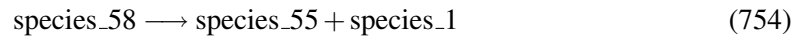
8.311 Reaction [reaction_310](#)

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

Name Ca dissociating from camR_ca2_AD_PP2B site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 626: Properties of each reactant.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	

Products

Table 627: Properties of each product.

Id	Name	SBO
species_55	camR_cal_D_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{311} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_1} \cdot [\text{species_58}] \quad (755)$$

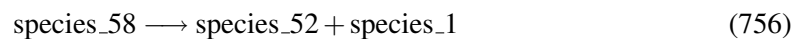
8.312 Reaction [reaction_311](#)

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

Name Ca dissociating from camR_ca2_AD_PP2B site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 628: Properties of each reactant.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	

Products

Table 629: Properties of each product.

Id	Name	SBO
species_52	camR_ca1_A_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{312} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{58}] \quad (757)$$

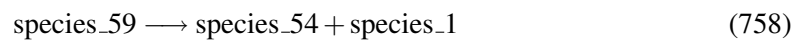
8.313 Reaction [reaction_312](#)

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

Name Ca dissociating from camR_ca2_BC_PP2B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 630: Properties of each reactant.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	

Products

Table 631: Properties of each product.

Id	Name	SBO
species_54	camR_ca1_C_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{313} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{59}] \quad (759)$$

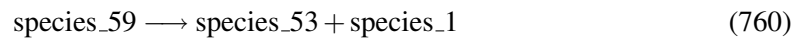
8.314 Reaction [reaction_313](#)

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

Name Ca dissociating from camR_ca2_BC_PP2B site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 632: Properties of each reactant.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	

Products

Table 633: Properties of each product.

Id	Name	SBO
species_53	camR_ca1_B_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{314} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{59}] \quad (761)$$

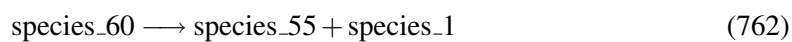
8.315 Reaction [reaction_314](#)

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

Name Ca dissociating from camR_ca2_BD_PP2B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 634: Properties of each reactant.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	

Products

Table 635: Properties of each product.

Id	Name	SBO
species_55	camR_ca1_D_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{315} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_2} \cdot [\text{species_60}] \quad (763)$$

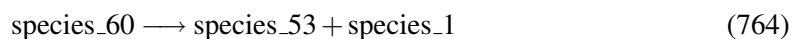
8.316 Reaction [reaction_315](#)

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

Name Ca dissociating from camR_ca2_BD_PP2B site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 636: Properties of each reactant.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	

Products

Table 637: Properties of each product.

Id	Name	SBO
species_53	camR_ca1_B_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{316} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{60}] \quad (765)$$

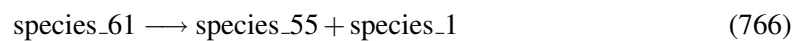
8.317 Reaction [reaction_316](#)

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

Name Ca dissociating from camR_ca2_CD_PP2B site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 638: Properties of each reactant.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	

Products

Table 639: Properties of each product.

Id	Name	SBO
species_55	camR_ca1_D_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{317} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_61] \quad (767)$$

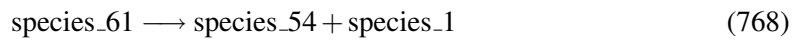
8.318 Reaction [reaction_317](#)

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

Name Ca dissociating from camR_ca2_CD_PP2B site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 640: Properties of each reactant.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	

Products

Table 641: Properties of each product.

Id	Name	SBO
species_54	camR_ca1_C_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{318} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{61}] \quad (769)$$

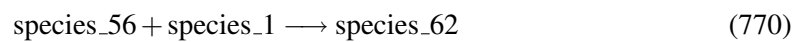
8.319 Reaction [reaction_318](#)

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

Name Ca binding to camR_ca2_AB_PP2B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 642: Properties of each reactant.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	
species_1	ca	

Product

Table 643: Properties of each product.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{319} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{56}] \cdot [\text{species}_1] \quad (771)$$

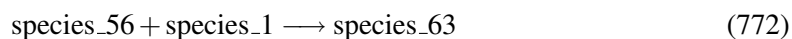
8.320 Reaction [reaction_319](#)

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

Name Ca binding to camR_ca2_AB_PP2B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 644: Properties of each reactant.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	
species_1	ca	

Product

Table 645: Properties of each product.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{320} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_56}] \cdot [\text{species_1}] \quad (773)$$

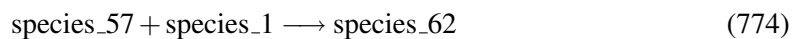
8.321 Reaction [reaction_320](#)

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

Name Ca binding to camR_ca2_AC_PP2B site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 646: Properties of each reactant.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	
species_1	ca	

Product

Table 647: Properties of each product.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{321} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{57}] \cdot [\text{species}_1] \quad (775)$$

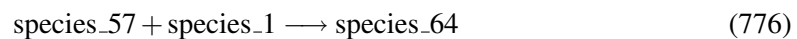
8.322 Reaction [reaction_321](#)

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

Name Ca binding to camR_ca2_AC_PP2B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 648: Properties of each reactant.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	
species_1	ca	

Product

Table 649: Properties of each product.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{322} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{57}] \cdot [\text{species}_1] \quad (777)$$

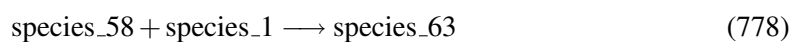
8.323 Reaction [reaction_322](#)

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

Name Ca binding to camR_ca2_AD_PP2B site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 650: Properties of each reactant.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	
species_1	ca	

Product

Table 651: Properties of each product.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{323} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{58}] \cdot [\text{species}_1] \quad (779)$$

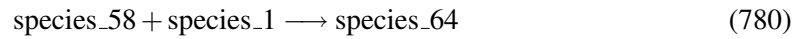
8.324 Reaction [reaction_323](#)

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

Name Ca binding to camR_ca2_AD_PP2B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 652: Properties of each reactant.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	
species_1	ca	

Product

Table 653: Properties of each product.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{324} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_58}] \cdot [\text{species_1}] \quad (781)$$

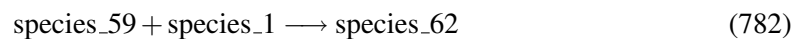
8.325 Reaction [reaction_324](#)

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

Name Ca binding to camR_ca2_BC_PP2B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 654: Properties of each reactant.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	
species_1	ca	

Product

Table 655: Properties of each product.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{325} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{59}] \cdot [\text{species}_1] \quad (783)$$

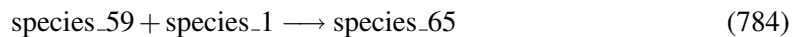
8.326 Reaction [reaction_325](#)

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

Name Ca binding to camR_ca2_BC_PP2B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 656: Properties of each reactant.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	
species_1	ca	

Product

Table 657: Properties of each product.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{326} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{59}] \cdot [\text{species}_1] \quad (785)$$

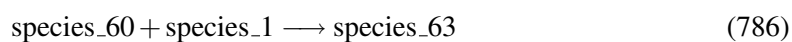
8.327 Reaction [reaction_326](#)

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

Name Ca binding to camR_ca2_BD_PP2B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 658: Properties of each reactant.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	
species_1	ca	

Product

Table 659: Properties of each product.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{327} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{60}] \cdot [\text{species}_1] \quad (787)$$

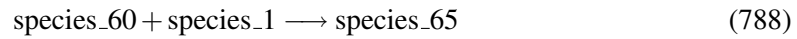
8.328 Reaction [reaction_327](#)

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

Name Ca binding to camR_ca2_BD_PP2B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 660: Properties of each reactant.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	
species_1	ca	

Product

Table 661: Properties of each product.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{328} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_60}] \cdot [\text{species_1}] \quad (789)$$

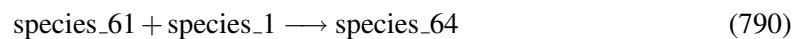
8.329 Reaction [reaction_328](#)

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

Name Ca binding to camR_ca2_CD_PP2B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 662: Properties of each reactant.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	
species_1	ca	

Product

Table 663: Properties of each product.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{329} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{61}] \cdot [\text{species}_1] \quad (791)$$

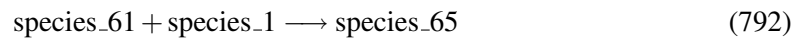
8.330 Reaction [reaction_329](#)

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

Name Ca binding to camR_ca2_CD_PP2B site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 664: Properties of each reactant.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	
species_1	ca	

Product

Table 665: Properties of each product.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{330} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{61}] \cdot [\text{species}_1] \quad (793)$$

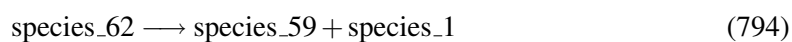
8.331 Reaction [reaction_330](#)

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

Name Ca dissociation from camR_ca3_ABC_PP2B site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 666: Properties of each reactant.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	

Products

Table 667: Properties of each product.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{331} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{62}] \quad (795)$$

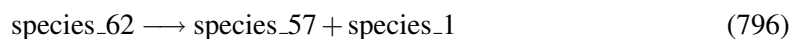
8.332 Reaction [reaction_331](#)

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

Name Ca dissociation from camR_ca3_ABC_PP2B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 668: Properties of each reactant.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	

Products

Table 669: Properties of each product.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{332} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_2} \cdot [\text{species_62}] \quad (797)$$

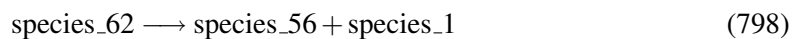
8.333 Reaction [reaction_332](#)

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

Name Ca dissociation from camR_ca3_ABC_PP2B site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 670: Properties of each reactant.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	

Products

Table 671: Properties of each product.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{333} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{62}] \quad (799)$$

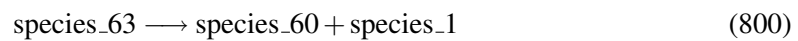
8.334 Reaction [reaction_333](#)

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

Name Ca dissociation from camR_ca3_ABD_PP2B site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 672: Properties of each reactant.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	

Products

Table 673: Properties of each product.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{334} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{63}] \quad (801)$$

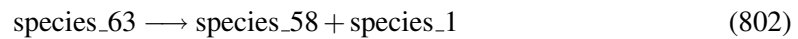
8.335 Reaction [reaction_334](#)

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

Name Ca dissociation from camR_ca3_ABD_PP2B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 674: Properties of each reactant.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	

Products

Table 675: Properties of each product.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{335} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{63}] \quad (803)$$

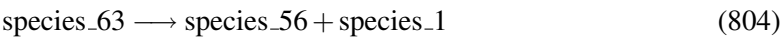
8.336 Reaction [reaction_335](#)

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

Name Ca dissociation from camR_ca3_ABD_PP2B site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 676: Properties of each reactant.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	

Products

Table 677: Properties of each product.

Id	Name	SBO
species_56	camR_ca2_AB_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{336} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_4} \cdot [\text{species_63}]$$

(805)

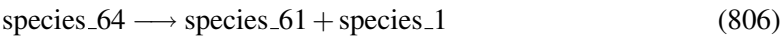
8.337 Reaction [reaction_336](#)

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

Name Ca dissociation from camR_ca3_ACD_PP2B site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 678: Properties of each reactant.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	

Products

Table 679: Properties of each product.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{337} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_{64}] \quad (807)$$

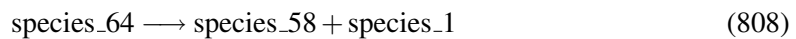
8.338 Reaction `reaction_337`

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

Name Ca dissociation from camR_ca3_ACD_PP2B site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 680: Properties of each reactant.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	

Products

Table 681: Properties of each product.

Id	Name	SBO
species_58	camR_ca2_AD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{338} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{64}] \quad (809)$$

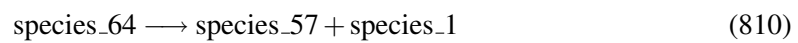
8.339 Reaction [reaction_338](#)

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

Name Ca dissociation from camR_ca3_ACD_PP2B site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 682: Properties of each reactant.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	

Products

Table 683: Properties of each product.

Id	Name	SBO
species_57	camR_ca2_AC_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{339} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{64}] \quad (811)$$

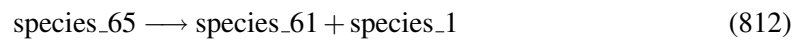
8.340 Reaction [reaction_339](#)

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

Name Ca dissociation from camR_ca3_BCD_PP2B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 684: Properties of each reactant.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	

Products

Table 685: Properties of each product.

Id	Name	SBO
species_61	camR_ca2_CD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{340} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{65}] \quad (813)$$

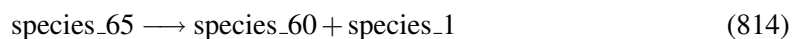
8.341 Reaction [reaction_340](#)

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

Name Ca dissociation from camR_ca3_BCD_PP2B site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 686: Properties of each reactant.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	

Products

Table 687: Properties of each product.

Id	Name	SBO
species_60	camR_ca2_BD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{341} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_3} \cdot [\text{species_65}] \quad (815)$$

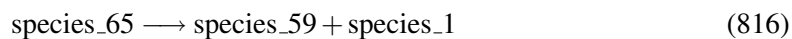
8.342 Reaction [reaction_341](#)

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

Name Ca dissociation from camR_ca3_BCD_PP2B site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 688: Properties of each reactant.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	

Products

Table 689: Properties of each product.

Id	Name	SBO
species_59	camR_ca2_BC_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{342} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_4 \cdot [\text{species}_{65}] \quad (817)$$

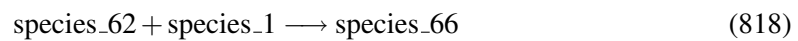
8.343 Reaction [reaction_342](#)

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

Name Ca binding to camR_ca3_ABC_PP2B site D

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 690: Properties of each reactant.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	
species_1	ca	

Product

Table 691: Properties of each product.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{343} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{62}] \cdot [\text{species}_1] \quad (819)$$

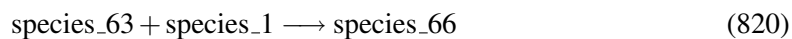
8.344 Reaction [reaction_343](#)

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

Name Ca binding to camR_ca3_ABD_PP2B site C

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 692: Properties of each reactant.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	
species_1	ca	

Product

Table 693: Properties of each product.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{344} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_{63}] \cdot [\text{species}_1] \quad (821)$$

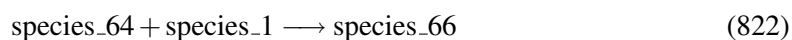
8.345 Reaction [reaction_344](#)

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

Name Ca binding to camR_ca3_ACD_PP2B site B

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 694: Properties of each reactant.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	
species_1	ca	

Product

Table 695: Properties of each product.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{345} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_0} \cdot [\text{species_64}] \cdot [\text{species_1}] \quad (823)$$

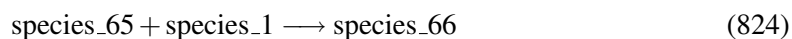
8.346 Reaction [reaction_345](#)

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

Name Ca binding to camR_ca3_BCD_PP2B site A

SBO:0000177 non-covalent binding

Reaction equation



Reactants

Table 696: Properties of each reactant.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	
species_1	ca	

Product

Table 697: Properties of each product.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{346} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_0 \cdot [\text{species}_65] \cdot [\text{species}_1] \quad (825)$$

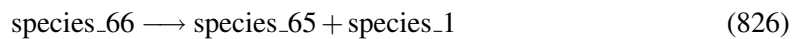
8.347 Reaction `reaction_346`

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

Name Ca dissociating from camR_ca4_ABCD_PP2B site A

SBO:0000180 dissociation

Reaction equation



Reactant

Table 698: Properties of each reactant.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Products

Table 699: Properties of each product.

Id	Name	SBO
species_65	camR_ca3_BCD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{347} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_1 \cdot [\text{species}_66] \quad (827)$$

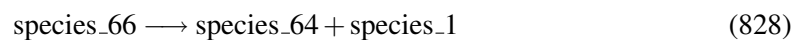
8.348 Reaction [reaction_347](#)

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

Name Ca dissociating from camR_ca4_ABCD_PP2B site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 700: Properties of each reactant.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Products

Table 701: Properties of each product.

Id	Name	SBO
species_64	camR_ca3_ACD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{348} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{66}] \quad (829)$$

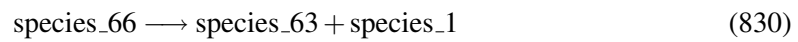
8.349 Reaction [reaction_348](#)

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

Name Ca dissociating from camR_ca4_ABCD_PP2B site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 702: Properties of each reactant.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Products

Table 703: Properties of each product.

Id	Name	SBO
species_63	camR_ca3_ABD_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{349} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_3 \cdot [\text{species}_{66}] \quad (831)$$

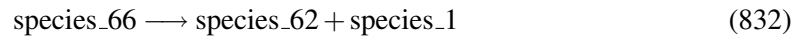
8.350 Reaction [reaction_349](#)

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

Name Ca dissociating from camR_ca4_ABCD_PP2B site D

SBO:0000180 dissociation

Reaction equation



Reactant

Table 704: Properties of each reactant.

Id	Name	SBO
species_66	camR_ca4_ABCD_PP2B	

Products

Table 705: Properties of each product.

Id	Name	SBO
species_62	camR_ca3_ABC_PP2B	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{350} = \text{vol}(\text{compartment_0}) \cdot \text{parameter_4} \cdot [\text{species_66}] \quad (833)$$

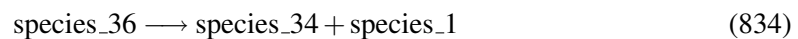
8.351 Reaction [reaction_350](#)

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

Name Ca dissociation from camR_ca1_CaMKII site B

SBO:0000180 dissociation

Reaction equation



Reactant

Table 706: Properties of each reactant.

Id	Name	SBO
species_36	camR_ca1_B_CaMKII	

Products

Table 707: Properties of each product.

Id	Name	SBO
species_34	camR_CaMKII	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{351} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_2 \cdot [\text{species}_{36}] \quad (835)$$

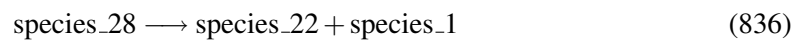
8.352 Reaction [reaction_351](#)

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

Name Ca dissociating from camT_ca3_ABC site C

SBO:0000180 dissociation

Reaction equation



Reactant

Table 708: Properties of each reactant.

Id	Name	SBO
species_28	camT_ca3_ABC	

Products

Table 709: Properties of each product.

Id	Name	SBO
species_22	camT_ca2_AB	
species_1	ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{352} = \text{vol}(\text{compartment}_0) \cdot \text{parameter}_7 \cdot [\text{species}_{28}] \quad (837)$$

9 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.

9.1 Species `species_0`

Name `camR`

SBO:0000252 polypeptide chain

Initial concentration $9.7 \cdot 10^{-12} \text{ mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [reaction_0](#), [reaction_1](#), [reaction_2](#), [reaction_3](#), [reaction_127](#), [reaction_159](#), [reaction_191](#) and as a product in [reaction_4](#), [reaction_5](#), [reaction_6](#), [reaction_7](#), [reaction_128](#), [reaction_175](#), [reaction_207](#)).

$$\begin{aligned} \frac{d}{dt} \text{species}_0 = & v_5 + v_6 + v_7 + v_8 + v_{129} + v_{176} + v_{208} \\ & - v_1 - v_2 - v_3 - v_4 - v_{128} - v_{160} - v_{192} \end{aligned} \quad (838)$$

9.2 Species `species_1`

Name `ca`

SBO:0000327 non-macromolecular ion

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

This species takes part in 256 reactions (as a reactant in [reaction_0](#), [reaction_1](#), [reaction_2](#), [reaction_3](#), [reaction_8](#), [reaction_9](#), [reaction_10](#), [reaction_11](#), [reaction_12](#), [reaction_13](#), [reaction_14](#), [reaction_15](#), [reaction_16](#), [reaction_17](#), [reaction_18](#), [reaction_19](#), [reaction_32](#), [reaction_33](#), [reaction_34](#), [reaction_35](#), [reaction_36](#), [reaction_37](#), [reaction_38](#), [reaction_39](#), [reaction_40](#), [reaction_41](#), [reaction_42](#), [reaction_43](#), [reaction_56](#), [reaction_57](#), [reaction_58](#), [reaction_59](#), [reaction_64](#), [reaction_65](#), [reaction_66](#), [reaction_67](#), [reaction_72](#), [reaction_73](#), [reaction_74](#), [reaction_75](#), [reaction_76](#), [reaction_77](#), [reaction_78](#), [reaction_79](#), [reaction_80](#), [reaction_81](#), [reaction_82](#), [reaction_83](#), [reaction_96](#), [reaction_97](#), [reaction_98](#), [reaction_99](#), [reaction_100](#), [reaction_101](#), [reaction_102](#), [reaction_103](#), [reaction_104](#), [reaction_105](#), [reaction_106](#), [reaction_107](#), [reaction_119](#), [reaction_120](#), [reaction_121](#), [reaction_122](#), [reaction_223](#), [reaction_224](#), [reaction_225](#), [reaction_226](#), [reaction_230](#), [reaction_231](#), [reaction_232](#), [reaction_233](#), [reaction_234](#), [reaction_235](#), [reaction_236](#), [reaction_237](#), [reaction_238](#), [reaction_239](#), [reaction_240](#), [reaction_241](#), [reaction_254](#), [reaction_255](#), [reaction_256](#), [reaction_257](#), [reaction_258](#), [reaction_259](#), [reaction_260](#), [reaction_261](#), [reaction_262](#), [reaction_263](#), [reaction_264](#), [reaction_265](#), [reaction_278](#), [reaction_279](#), [reaction_280](#), [reaction_281](#), [reaction_286](#), [reaction_287](#), [reaction_288](#), [reaction_289](#), [reaction_294](#), [reaction_295](#), [reaction_296](#), [reaction_297](#), [reaction_298](#), [reaction_299](#), [reaction_300](#), [reaction_301](#), [reaction_302](#), [reaction_303](#), [reaction_304](#), [reaction_305](#), [reaction_318](#), [reaction_319](#), [reaction_320](#), [reaction_321](#), [reaction_322](#), [reaction_323](#), [reaction_324](#), [reaction_325](#), [reaction_326](#), [reaction_327](#), [reaction_328](#), [reaction_329](#), [reaction_342](#), [reaction_343](#), [reaction_344](#), [reaction_345](#) and as a product in [reaction_4](#), [reaction_5](#), [reaction_6](#), [reaction_7](#), [reaction_20](#), [reaction_21](#), [reaction_22](#), [reaction_23](#), [reaction_24](#), [reaction_25](#), [reaction_26](#), [reaction_27](#), [reaction_28](#), [reaction_29](#), [reaction_30](#), [reaction_31](#), [reaction_44](#), [reaction_45](#), [reaction_46](#), [reaction_47](#), [reaction_48](#), [reaction_49](#), [reaction_50](#), [reaction_51](#), [reaction_52](#), [reaction_53](#), [reaction_54](#), [reaction_55](#), [reaction_60](#), [reaction_61](#), [reaction_62](#), [reaction_63](#), [reaction_68](#), [reaction_69](#), [reaction_70](#), [reaction_71](#), [reaction_84](#), [reaction_85](#), [reaction_86](#), [reaction_87](#), [reaction_88](#), [reaction_89](#), [reaction_90](#), [reaction_91](#), [reaction_92](#), [reaction_93](#), [reaction_94](#), [reaction_95](#), [reaction_108](#), [reaction_109](#), [reaction_110](#), [reaction_111](#), [reaction_112](#), [reaction_113](#), [reaction_114](#), [reaction_115](#), [reaction_116](#), [reaction_117](#), [reaction_118](#), [reaction_123](#), [reaction_124](#), [reaction_125](#), [reaction_126](#), [reaction_227](#), [reaction_228](#), [reaction_229](#), [reaction_242](#), [reaction_243](#), [reaction_244](#), [reaction_245](#), [reaction_246](#), [reaction_247](#), [reaction_248](#), [reaction_249](#), [reaction_250](#), [reaction_251](#), [reaction_252](#), [reaction_253](#), [reaction_266](#), [reaction_267](#), [reaction_268](#), [reaction_269](#), [reaction_270](#), [reaction_271](#), [reaction_272](#), [reaction_273](#), [reaction_274](#), [reaction_275](#), [reaction_276](#), [reaction_277](#), [reaction_282](#), [reaction_283](#), [reaction_284](#), [reaction_285](#), [reaction_290](#), [reaction_291](#), [reaction_292](#), [reaction_293](#), [reaction_306](#), [reaction_307](#), [reaction_308](#), [reaction_309](#), [reaction_310](#), [reaction_311](#), [reaction_312](#), [reaction_313](#), [reaction_314](#), [reaction_315](#), [reaction_316](#), [reaction_317](#), [reaction_330](#), [reaction_331](#), [reaction_332](#), [reaction_333](#), [reaction_334](#), [reaction_335](#), [reaction_336](#), [reaction_337](#), [reaction_338](#), [reaction_339](#), [reaction_340](#), [reaction_341](#), [reaction_346](#), [reaction_347](#), [reaction_348](#), [reaction_349](#), [reaction_350](#)).

[_350](#), [reaction_351](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_1} = & v_5 + v_6 + v_7 + v_8 + v_{21} + v_{22} + v_{23} + v_{24} + v_{25} + v_{26} + v_{27} + v_{28} \\ & + v_{29} + v_{30} + v_{31} + v_{32} + v_{45} + v_{46} + v_{47} + v_{48} + v_{49} + v_{50} + v_{51} + v_{52} \\ & + v_{53} + v_{54} + v_{55} + v_{56} + v_{61} + v_{62} + v_{63} + v_{64} + v_{69} + v_{70} + v_{71} + v_{72} \\ & + v_{85} + v_{86} + v_{87} + v_{88} + v_{89} + v_{90} + v_{91} + v_{92} + v_{93} + v_{94} + v_{95} + v_{96} \\ & + v_{109} + v_{110} + v_{111} + v_{112} + v_{113} + v_{114} + v_{115} + v_{116} + v_{117} + v_{118} \\ & + v_{119} + v_{124} + v_{125} + v_{126} + v_{127} + v_{228} + v_{229} + v_{230} + v_{243} + v_{244} \\ & + v_{245} + v_{246} + v_{247} + v_{248} + v_{249} + v_{250} + v_{251} + v_{252} + v_{253} + v_{254} \\ & + v_{267} + v_{268} + v_{269} + v_{270} + v_{271} + v_{272} + v_{273} + v_{274} + v_{275} + v_{276} \\ & + v_{277} + v_{278} + v_{283} + v_{284} + v_{285} + v_{286} + v_{291} + v_{292} + v_{293} + v_{294} \\ & + v_{307} + v_{308} + v_{309} + v_{310} + v_{311} + v_{312} + v_{313} + v_{314} + v_{315} + v_{316} \\ & + v_{317} + v_{318} + v_{331} + v_{332} + v_{333} + v_{334} + v_{335} + v_{336} + v_{337} + v_{338} \\ & + v_{339} + v_{340} + v_{341} + v_{342} + v_{347} + v_{348} + v_{349} + v_{350} + v_{351} + v_{352} \\ & - v_1 - v_2 - v_3 - v_4 - v_9 - v_{10} - v_{11} - v_{12} - v_{13} - v_{14} - v_{15} - v_{16} \\ & - v_{17} - v_{18} - v_{19} - v_{20} - v_{33} - v_{34} - v_{35} - v_{36} - v_{37} - v_{38} - v_{39} \\ & - v_{40} - v_{41} - v_{42} - v_{43} - v_{44} - v_{57} - v_{58} - v_{59} - v_{60} - v_{65} - v_{66} - v_{67} \\ & - v_{68} - v_{73} - v_{74} - v_{75} - v_{76} - v_{77} - v_{78} - v_{79} - v_{80} - v_{81} - v_{82} - v_{83} \\ & - v_{84} - v_{97} - v_{98} - v_{99} - v_{100} - v_{101} - v_{102} - v_{103} - v_{104} - v_{105} - v_{106} \\ & - v_{107} - v_{108} - v_{120} - v_{121} - v_{122} - v_{123} - v_{224} - v_{225} - v_{226} - v_{227} \\ & - v_{231} - v_{232} - v_{233} - v_{234} - v_{235} - v_{236} - v_{237} - v_{238} - v_{239} - v_{240} \\ & - v_{241} - v_{242} - v_{255} - v_{256} - v_{257} - v_{258} - v_{259} - v_{260} - v_{261} - v_{262} \\ & - v_{263} - v_{264} - v_{265} - v_{266} - v_{279} - v_{280} - v_{281} - v_{282} - v_{287} - v_{288} \\ & - v_{289} - v_{290} - v_{295} - v_{296} - v_{297} - v_{298} - v_{299} - v_{300} - v_{301} - v_{302} \\ & - v_{303} - v_{304} - v_{305} - v_{306} - v_{319} - v_{320} - v_{321} - v_{322} - v_{323} - v_{324} \\ & - v_{325} - v_{326} - v_{327} - v_{328} - v_{329} - v_{330} - v_{343} - v_{344} - v_{345} - v_{346} \end{aligned} \quad (839)$$

9.3 Species [species_2](#)

Name [camR_cal_A](#)

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_4](#), [reaction_8](#), [reaction_9](#), [reaction_10](#), [reaction_129](#), [reaction_160](#), [reaction_192](#) and as a product in [reaction_0](#), [reaction_20](#), [reaction_21](#), [reaction_22](#), [reaction_133](#), [reaction_176](#), [reaction_208](#)).

$$\frac{d}{dt}\text{species_2} = v_1 + v_{21} + v_{22} + v_{23} + v_{134} + v_{177} + v_{209} - v_5 - v_9 - v_{10} - v_{11} - v_{130} - v_{161} - v_{193} \quad (840)$$

9.4 Species species_3

Name camR_cal_B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_5](#), [reaction_11](#), [reaction_12](#), [reaction_13](#), [reaction_130](#), [reaction_161](#), [reaction_193](#) and as a product in [reaction_1](#), [reaction_23](#), [reaction_24](#), [reaction_25](#), [reaction_134](#), [reaction_177](#), [reaction_209](#)).

$$\frac{d}{dt}\text{species_3} = v_2 + v_{24} + v_{25} + v_{26} + v_{135} + v_{178} + v_{210} - v_6 - v_{12} - v_{13} - v_{14} - v_{131} - v_{162} - v_{194} \quad (841)$$

9.5 Species species_4

Name camR_cal_C

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_6](#), [reaction_14](#), [reaction_15](#), [reaction_16](#), [reaction_131](#), [reaction_162](#), [reaction_194](#) and as a product in [reaction_2](#), [reaction_26](#), [reaction_27](#), [reaction_28](#), [reaction_135](#), [reaction_178](#), [reaction_210](#)).

$$\frac{d}{dt}\text{species_4} = v_3 + v_{27} + v_{28} + v_{29} + v_{136} + v_{179} + v_{211} - v_7 - v_{15} - v_{16} - v_{17} - v_{132} - v_{163} - v_{195} \quad (842)$$

9.6 Species species_5

Name camR_cal_D

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_7](#), [reaction_17](#), [reaction_18](#), [reaction_19](#), [reaction_132](#), [reaction_163](#), [reaction_195](#) and as a product in [reaction_3](#), [reaction_29](#), [reaction_30](#), [reaction_31](#), [reaction_136](#), [reaction_179](#), [reaction_211](#)).

$$\begin{aligned} \frac{d}{dt} \text{species}_5 = & v_4 + v_{30} + v_{31} + v_{32} + v_{137} + v_{180} + v_{212} \\ & - v_8 - v_{18} - v_{19} - v_{20} - v_{133} - v_{164} - v_{196} \end{aligned} \quad (843)$$

9.7 Species `species_6`

Name camR_ca2_AB

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_20](#), [reaction_23](#), [reaction_32](#), [reaction_33](#), [reaction_137](#), [reaction_164](#), [reaction_196](#) and as a product in [reaction_8](#), [reaction_11](#), [reaction_46](#), [reaction_49](#), [reaction_143](#), [reaction_180](#), [reaction_212](#)).

$$\begin{aligned} \frac{d}{dt} \text{species}_6 = & v_9 + v_{12} + v_{47} + v_{50} + v_{144} + v_{181} + v_{213} \\ & - v_{21} - v_{24} - v_{33} - v_{34} - v_{138} - v_{165} - v_{197} \end{aligned} \quad (844)$$

9.8 Species `species_7`

Name camR_ca2_AC

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_21](#), [reaction_26](#), [reaction_34](#), [reaction_35](#), [reaction_138](#), [reaction_165](#), [reaction_197](#) and as a product in [reaction_9](#), [reaction_14](#), [reaction_45](#), [reaction_52](#), [reaction_144](#), [reaction_181](#), [reaction_213](#)).

$$\begin{aligned} \frac{d}{dt} \text{species}_7 = & v_{10} + v_{15} + v_{46} + v_{53} + v_{145} + v_{182} + v_{214} \\ & - v_{22} - v_{27} - v_{35} - v_{36} - v_{139} - v_{166} - v_{198} \end{aligned} \quad (845)$$

9.9 Species species_8

Name camR_ca2_AD

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_22](#), [reaction_29](#), [reaction_36](#), [reaction_37](#), [reaction_139](#), [reaction_166](#), [reaction_198](#) and as a product in [reaction_10](#), [reaction_17](#), [reaction_48](#), [reaction_51](#), [reaction_145](#), [reaction_182](#), [reaction_214](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_8} = & v_{11} + v_{18} + v_{49} + v_{52} + v_{146} + v_{183} + v_{215} \\ & - v_{23} - v_{30} - v_{37} - v_{38} - v_{140} - v_{167} - v_{199} \end{aligned} \quad (846)$$

9.10 Species species_9

Name camR_ca2_BC

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_24](#), [reaction_27](#), [reaction_38](#), [reaction_39](#), [reaction_140](#), [reaction_167](#), [reaction_199](#) and as a product in [reaction_12](#), [reaction_15](#), [reaction_44](#), [reaction_55](#), [reaction_146](#), [reaction_183](#), [reaction_215](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_9} = & v_{13} + v_{16} + v_{45} + v_{56} + v_{147} + v_{184} + v_{216} \\ & - v_{25} - v_{28} - v_{39} - v_{40} - v_{141} - v_{168} - v_{200} \end{aligned} \quad (847)$$

9.11 Species species_10

Name camR_ca2_BD

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in 14 reactions (as a reactant in [reaction_25](#), [reaction_30](#), [reaction_40](#), [reaction_41](#), [reaction_141](#), [reaction_168](#), [reaction_200](#) and as a product in [reaction_13](#), [reaction_18](#), [reaction_47](#), [reaction_54](#), [reaction_147](#), [reaction_184](#), [reaction_216](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_10} = & v_{14} + v_{19} + v_{48} + v_{55} + v_{148} + v_{185} + v_{217} \\ & - v_{26} - v_{31} - v_{41} - v_{42} - v_{142} - v_{169} - v_{201} \end{aligned} \quad (848)$$

9.12 Species `species_11`

Name `camR_ca2_CD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [reaction_28](#), [reaction_31](#), [reaction_42](#), [reaction_43](#), [reaction_142](#), [reaction_169](#), [reaction_201](#) and as a product in [reaction_16](#), [reaction_19](#), [reaction_50](#), [reaction_53](#), [reaction_148](#), [reaction_185](#), [reaction_217](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_11} = & v_{17} + v_{20} + v_{51} + v_{54} + v_{149} + v_{186} + v_{218} \\ & - v_{29} - v_{32} - v_{43} - v_{44} - v_{143} - v_{170} - v_{202} \end{aligned} \quad (849)$$

9.13 Species `species_12`

Name `camR_ca3_ABC`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [reaction_44](#), [reaction_45](#), [reaction_46](#), [reaction_56](#), [reaction_149](#), [reaction_170](#), [reaction_202](#) and as a product in [reaction_32](#), [reaction_34](#), [reaction_38](#), [reaction_60](#), [reaction_153](#), [reaction_186](#), [reaction_218](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_12} = & v_{33} + v_{35} + v_{39} + v_{61} + v_{154} + v_{187} + v_{219} \\ & - v_{45} - v_{46} - v_{47} - v_{57} - v_{150} - v_{171} - v_{203} \end{aligned} \quad (850)$$

9.14 Species `species_13`

Name `camR_ca3_ABD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [reaction_47](#), [reaction_48](#), [reaction_49](#), [reaction_57](#), [reaction_150](#), [reaction_171](#), [reaction_203](#) and as a product in [reaction_33](#), [reaction_36](#), [reaction_40](#), [reaction_61](#), [reaction_154](#), [reaction_187](#), [reaction_219](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_13} = & v_{34} + v_{37} + v_{41} + v_{62} + v_{155} + v_{188} + v_{220} \\ & - v_{48} - v_{49} - v_{50} - v_{58} - v_{151} - v_{172} - v_{204} \end{aligned} \quad (851)$$

9.15 Species `species_14`

Name `camR_ca3_ACD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [reaction_50](#), [reaction_51](#), [reaction_52](#), [reaction_58](#), [reaction_151](#), [reaction_172](#), [reaction_204](#) and as a product in [reaction_35](#), [reaction_37](#), [reaction_42](#), [reaction_62](#), [reaction_155](#), [reaction_188](#), [reaction_220](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_14} = & v_{36} + v_{38} + v_{43} + v_{63} + v_{156} + v_{189} + v_{221} \\ & - v_{51} - v_{52} - v_{53} - v_{59} - v_{152} - v_{173} - v_{205} \end{aligned} \quad (852)$$

9.16 Species `species_15`

Name `camR_ca3_BCD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [reaction_53](#), [reaction_54](#), [reaction_55](#), [reaction_59](#), [reaction_152](#), [reaction_173](#), [reaction_205](#) and as a product in [reaction_39](#), [reaction_41](#), [reaction_43](#), [reaction_63](#), [reaction_156](#), [reaction_189](#), [reaction_221](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_15} = & v_{40} + v_{42} + v_{44} + v_{64} + v_{157} + v_{190} + v_{222} \\ & - v_{54} - v_{55} - v_{56} - v_{60} - v_{153} - v_{174} - v_{206} \end{aligned} \quad (853)$$

9.17 Species `species_16`

Name `camR_ca4_ABCD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in [reaction_60](#), [reaction_61](#), [reaction_62](#), [reaction_63](#), [reaction_157](#), [reaction_174](#), [reaction_206](#) and as a product in [reaction_56](#), [reaction_57](#), [reaction_58](#), [reaction_59](#), [reaction_158](#), [reaction_190](#), [reaction_222](#)).

$$\begin{aligned} \frac{d}{dt} \text{species_16} = & v_{57} + v_{58} + v_{59} + v_{60} + v_{159} + v_{191} + v_{223} \\ & - v_{61} - v_{62} - v_{63} - v_{64} - v_{158} - v_{175} - v_{207} \end{aligned} \quad (854)$$

9.18 Species species_17

Name camT

SBO:0000297 protein complex

Initial concentration $2 \cdot 10^{-7} \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_64](#), [reaction_65](#), [reaction_66](#), [reaction_67](#), [reaction_128](#) and as a product in [reaction_68](#), [reaction_69](#), [reaction_70](#), [reaction_71](#), [reaction_127](#)).

$$\frac{d}{dt}\text{species_17} = v_{69} + v_{70} + v_{71} + v_{72} + v_{128} - v_{65} - v_{66} - v_{67} - v_{68} - v_{129} \quad (855)$$

9.19 Species species_18

Name camT_cal_A

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_68](#), [reaction_72](#), [reaction_73](#), [reaction_74](#), [reaction_133](#) and as a product in [reaction_64](#), [reaction_85](#), [reaction_87](#), [reaction_89](#), [reaction_129](#)).

$$\frac{d}{dt}\text{species_18} = v_{65} + v_{86} + v_{88} + v_{90} + v_{130} - v_{69} - v_{73} - v_{74} - v_{75} - v_{134} \quad (856)$$

9.20 Species species_19

Name camT_cal_B

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_69](#), [reaction_75](#), [reaction_76](#), [reaction_77](#), [reaction_134](#) and as a product in [reaction_65](#), [reaction_84](#), [reaction_91](#), [reaction_93](#), [reaction_130](#)).

$$\frac{d}{dt}\text{species_19} = v_{66} + v_{85} + v_{92} + v_{94} + v_{131} - v_{70} - v_{76} - v_{77} - v_{78} - v_{135} \quad (857)$$

9.21 Species `species_20`

Name `camT_ca1_C`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_70](#), [reaction_78](#), [reaction_79](#), [reaction_80](#), [reaction_135](#) and as a product in [reaction_66](#), [reaction_86](#), [reaction_90](#), [reaction_95](#), [reaction_131](#)).

$$\frac{d}{dt}\text{species_20} = v_{67} + v_{87} + v_{91} + v_{96} + v_{132} - v_{71} - v_{79} - v_{80} - v_{81} - v_{136} \quad (858)$$

9.22 Species `species_21`

Name `camT_ca1_D`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_71](#), [reaction_81](#), [reaction_82](#), [reaction_83](#), [reaction_136](#) and as a product in [reaction_67](#), [reaction_88](#), [reaction_92](#), [reaction_94](#), [reaction_132](#)).

$$\frac{d}{dt}\text{species_21} = v_{68} + v_{89} + v_{93} + v_{95} + v_{133} - v_{72} - v_{82} - v_{83} - v_{84} - v_{137} \quad (859)$$

9.23 Species `species_22`

Name `camT_ca2_AB`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_84](#), [reaction_85](#), [reaction_96](#), [reaction_97](#), [reaction_143](#) and as a product in [reaction_72](#), [reaction_75](#), [reaction_110](#), [reaction_137](#), [reaction_351](#)).

$$\frac{d}{dt}\text{species_22} = v_{73} + v_{76} + v_{111} + v_{138} + v_{352} - v_{85} - v_{86} - v_{97} - v_{98} - v_{144} \quad (860)$$

9.24 Species [species_23](#)

Name camT_ca2_AC

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_86](#), [reaction_87](#), [reaction_98](#), [reaction_99](#), [reaction_144](#) and as a product in [reaction_73](#), [reaction_78](#), [reaction_108](#), [reaction_113](#), [reaction_138](#)).

$$\frac{d}{dt}\text{species_23} = v_{74} + v_{79} + v_{109} + v_{114} + v_{139} - v_{87} - v_{88} - v_{99} - v_{100} - v_{145} \quad (861)$$

9.25 Species [species_24](#)

Name camT_ca2_AD

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_88](#), [reaction_89](#), [reaction_100](#), [reaction_101](#), [reaction_145](#) and as a product in [reaction_74](#), [reaction_81](#), [reaction_111](#), [reaction_114](#), [reaction_139](#)).

$$\frac{d}{dt}\text{species_24} = v_{75} + v_{82} + v_{112} + v_{115} + v_{140} - v_{89} - v_{90} - v_{101} - v_{102} - v_{146} \quad (862)$$

9.26 Species [species_25](#)

Name camT_ca2_BC

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_90](#), [reaction_91](#), [reaction_102](#), [reaction_103](#), [reaction_146](#) and as a product in [reaction_76](#), [reaction_79](#), [reaction_109](#), [reaction_116](#), [reaction_140](#)).

$$\frac{d}{dt}\text{species_25} = v_{77} + v_{80} + v_{110} + v_{117} + v_{141} - v_{91} - v_{92} - v_{103} - v_{104} - v_{147} \quad (863)$$

9.27 Species `species_26`

Name `camT_ca2_BD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_92](#), [reaction_93](#), [reaction_104](#), [reaction_105](#), [reaction_147](#) and as a product in [reaction_77](#), [reaction_82](#), [reaction_112](#), [reaction_117](#), [reaction_141](#)).

$$\frac{d}{dt}\text{species_26} = v_{78} + v_{83} + v_{113} + v_{118} + v_{142} - v_{93} - v_{94} - v_{105} - v_{106} - v_{148} \quad (864)$$

9.28 Species `species_27`

Name `camT_ca2_CD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_94](#), [reaction_95](#), [reaction_106](#), [reaction_107](#), [reaction_148](#) and as a product in [reaction_80](#), [reaction_83](#), [reaction_115](#), [reaction_118](#), [reaction_142](#)).

$$\frac{d}{dt}\text{species_27} = v_{81} + v_{84} + v_{116} + v_{119} + v_{143} - v_{95} - v_{96} - v_{107} - v_{108} - v_{149} \quad (865)$$

9.29 Species `species_28`

Name `camT_ca3_ABC`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_108](#), [reaction_109](#), [reaction_119](#), [reaction_153](#), [reaction_351](#) and as a product in [reaction_96](#), [reaction_98](#), [reaction_102](#), [reaction_123](#), [reaction_149](#)).

$$\frac{d}{dt}\text{species_28} = v_{97} + v_{99} + v_{103} + v_{124} + v_{150} - v_{109} - v_{110} - v_{120} - v_{154} - v_{352} \quad (866)$$

9.30 Species `species_29`

Name `camT_ca3_ABD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_110](#), [reaction_111](#), [reaction_112](#), [reaction_120](#), [reaction_154](#) and as a product in [reaction_97](#), [reaction_100](#), [reaction_104](#), [reaction_124](#), [reaction_150](#)).

$$\frac{d}{dt}\text{species_29} = v_{98} + v_{101} + v_{105} + v_{125} + v_{151} - v_{111} - v_{112} - v_{113} - v_{121} - v_{155} \quad (867)$$

9.31 Species `species_30`

Name `camT_ca3_ACD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_113](#), [reaction_114](#), [reaction_115](#), [reaction_121](#), [reaction_155](#) and as a product in [reaction_99](#), [reaction_101](#), [reaction_106](#), [reaction_125](#), [reaction_151](#)).

$$\frac{d}{dt}\text{species_30} = v_{100} + v_{102} + v_{107} + v_{126} + v_{152} - v_{114} - v_{115} - v_{116} - v_{122} - v_{156} \quad (868)$$

9.32 Species `species_31`

Name `camT_ca3_BCD`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_116](#), [reaction_117](#), [reaction_118](#), [reaction_122](#), [reaction_156](#) and as a product in [reaction_103](#), [reaction_105](#), [reaction_107](#), [reaction_126](#), [reaction_152](#)).

$$\frac{d}{dt}\text{species_31} = v_{104} + v_{106} + v_{108} + v_{127} + v_{153} - v_{117} - v_{118} - v_{119} - v_{123} - v_{157} \quad (869)$$

9.33 Species species_32

Name camT_ca4_ABCD

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_123](#), [reaction_124](#), [reaction_125](#), [reaction_126](#), [reaction_158](#) and as a product in [reaction_119](#), [reaction_120](#), [reaction_121](#), [reaction_122](#), [reaction_157](#)).

$$\frac{d}{dt}\text{species_32} = v_{120} + v_{121} + v_{122} + v_{123} + v_{158} - v_{124} - v_{125} - v_{126} - v_{127} - v_{159} \quad (870)$$

9.34 Species species_33

Name CaMKII

SBO:0000297 protein complex

Initial concentration 7 · 10⁻⁵ mol · l⁻¹

This species takes part in 32 reactions (as a reactant in [reaction_159](#), [reaction_160](#), [reaction_161](#), [reaction_162](#), [reaction_163](#), [reaction_164](#), [reaction_165](#), [reaction_166](#), [reaction_167](#), [reaction_168](#), [reaction_169](#), [reaction_170](#), [reaction_171](#), [reaction_172](#), [reaction_173](#), [reaction_174](#) and as a product in [reaction_175](#), [reaction_176](#), [reaction_177](#), [reaction_178](#), [reaction_179](#), [reaction_180](#), [reaction_181](#), [reaction_182](#), [reaction_183](#), [reaction_184](#), [reaction_185](#), [reaction_186](#), [reaction_187](#), [reaction_188](#), [reaction_189](#), [reaction_190](#)).

$$\begin{aligned} \frac{d}{dt}\text{species_33} = & v_{176} + v_{177} + v_{178} + v_{179} + v_{180} + v_{181} + v_{182} + v_{183} \\ & + v_{184} + v_{185} + v_{186} + v_{187} + v_{188} + v_{189} + v_{190} + v_{191} \\ & - v_{160} - v_{161} - v_{162} - v_{163} - v_{164} - v_{165} - v_{166} - v_{167} \\ & - v_{168} - v_{169} - v_{170} - v_{171} - v_{172} - v_{173} - v_{174} - v_{175} \end{aligned} \quad (871)$$

9.35 Species species_34

Name camR_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_175](#), [reaction_223](#), [reaction_224](#), [reaction_225](#), [reaction_226](#) and as a product in [reaction_159](#), [reaction_227](#), [reaction_228](#), [reaction_229](#), [reaction_350](#)).

$$\frac{d}{dt}\text{species_34} = v_{160} + v_{228} + v_{229} + v_{230} + v_{351} - v_{176} - v_{224} - v_{225} - v_{226} - v_{227} \quad (872)$$

9.36 Species [species_35](#)

Name camR_ca1_A_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_176](#), [reaction_227](#), [reaction_230](#), [reaction_231](#), [reaction_232](#) and as a product in [reaction_160](#), [reaction_223](#), [reaction_243](#), [reaction_245](#), [reaction_247](#)).

$$\frac{d}{dt}\text{species_35} = v_{161} + v_{224} + v_{244} + v_{246} + v_{248} - v_{177} - v_{228} - v_{231} - v_{232} - v_{233} \quad (873)$$

9.37 Species [species_36](#)

Name camR_ca1_B_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_177](#), [reaction_233](#), [reaction_234](#), [reaction_235](#), [reaction_350](#) and as a product in [reaction_161](#), [reaction_224](#), [reaction_242](#), [reaction_249](#), [reaction_251](#)).

$$\frac{d}{dt}\text{species_36} = v_{162} + v_{225} + v_{243} + v_{250} + v_{252} - v_{178} - v_{234} - v_{235} - v_{236} - v_{351} \quad (874)$$

9.38 Species [species_37](#)

Name camR_ca1_C_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_178](#), [reaction_228](#), [reaction_236](#), [reaction_237](#), [reaction_238](#) and as a product in [reaction_162](#), [reaction_225](#), [reaction_244](#), [reaction_248](#), [reaction_253](#)).

$$\frac{d}{dt}\text{species_37} = v_{163} + v_{226} + v_{245} + v_{249} + v_{254} - v_{179} - v_{229} - v_{237} - v_{238} - v_{239} \quad (875)$$

9.39 Species [species_38](#)

Name camR_ca1_D_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_179](#), [reaction_229](#), [reaction_239](#), [reaction_240](#), [reaction_241](#) and as a product in [reaction_163](#), [reaction_226](#), [reaction_246](#), [reaction_250](#), [reaction_252](#)).

$$\frac{d}{dt}\text{species_38} = v_{164} + v_{227} + v_{247} + v_{251} + v_{253} - v_{180} - v_{230} - v_{240} - v_{241} - v_{242} \quad (876)$$

9.40 Species [species_39](#)

Name camR_ca2_AB_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_180](#), [reaction_242](#), [reaction_243](#), [reaction_254](#), [reaction_255](#) and as a product in [reaction_164](#), [reaction_230](#), [reaction_233](#), [reaction_266](#), [reaction_269](#)).

$$\frac{d}{dt}\text{species_39} = v_{165} + v_{231} + v_{234} + v_{267} + v_{270} - v_{181} - v_{243} - v_{244} - v_{255} - v_{256} \quad (877)$$

9.41 Species [species_40](#)

Name camR_ca2_AC_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_181](#), [reaction_244](#), [reaction_245](#), [reaction_256](#), [reaction_257](#) and as a product in [reaction_165](#), [reaction_231](#), [reaction_236](#), [reaction_267](#), [reaction_272](#)).

$$\frac{d}{dt}\text{species_40} = v_{166} + v_{232} + v_{237} + v_{268} + v_{273} - v_{182} - v_{245} - v_{246} - v_{257} - v_{258} \quad (878)$$

9.42 Species [species_41](#)

Name camR_ca2_AD_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_182](#), [reaction_246](#), [reaction_247](#), [reaction_258](#), [reaction_259](#) and as a product in [reaction_166](#), [reaction_232](#), [reaction_239](#), [reaction_270](#), [reaction_273](#)).

$$\frac{d}{dt}\text{species_41} = v_{167} + v_{233} + v_{240} + v_{271} + v_{274} - v_{183} - v_{247} - v_{248} - v_{259} - v_{260} \quad (879)$$

9.43 Species [species_42](#)

Name camR_ca2_BC_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_183](#), [reaction_248](#), [reaction_249](#), [reaction_260](#), [reaction_261](#) and as a product in [reaction_167](#), [reaction_234](#), [reaction_237](#), [reaction_268](#), [reaction_275](#)).

$$\frac{d}{dt}\text{species_42} = v_{168} + v_{235} + v_{238} + v_{269} + v_{276} - v_{184} - v_{249} - v_{250} - v_{261} - v_{262} \quad (880)$$

9.44 Species [species_43](#)

Name camR_ca2_BD_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_184](#), [reaction_250](#), [reaction_251](#), [reaction_262](#), [reaction_263](#) and as a product in [reaction_168](#), [reaction_235](#), [reaction_240](#), [reaction_271](#), [reaction_276](#)).

$$\frac{d}{dt}\text{species_43} = v_{169} + v_{236} + v_{241} + v_{272} + v_{277} - v_{185} - v_{251} - v_{252} - v_{263} - v_{264} \quad (881)$$

9.45 Species [species_44](#)

Name camR_ca2_CD_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_185](#), [reaction_252](#), [reaction_253](#), [reaction_264](#), [reaction_265](#) and as a product in [reaction_169](#), [reaction_238](#), [reaction_241](#), [reaction_274](#), [reaction_277](#)).

$$\frac{d}{dt}\text{species_44} = v_{170} + v_{239} + v_{242} + v_{275} + v_{278} - v_{186} - v_{253} - v_{254} - v_{265} - v_{266} \quad (882)$$

9.46 Species [species_45](#)

Name camR_ca3_ABC_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_186](#), [reaction_266](#), [reaction_267](#), [reaction_268](#), [reaction_281](#) and as a product in [reaction_170](#), [reaction_254](#), [reaction_256](#), [reaction_260](#), [reaction_285](#)).

$$\frac{d}{dt}\text{species_45} = v_{171} + v_{255} + v_{257} + v_{261} + v_{286} - v_{187} - v_{267} - v_{268} - v_{269} - v_{282} \quad (883)$$

9.47 Species [species_46](#)

Name camR_ca3_ABD_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_187](#), [reaction_269](#), [reaction_270](#), [reaction_271](#), [reaction_280](#) and as a product in [reaction_171](#), [reaction_255](#), [reaction_258](#), [reaction_262](#), [reaction_284](#)).

$$\frac{d}{dt}\text{species_46} = v_{172} + v_{256} + v_{259} + v_{263} + v_{285} - v_{188} - v_{270} - v_{271} - v_{272} - v_{281} \quad (884)$$

9.48 Species [species_47](#)

Name camR_ca3_ACD_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_188](#), [reaction_272](#), [reaction_273](#), [reaction_274](#), [reaction_279](#) and as a product in [reaction_172](#), [reaction_257](#), [reaction_259](#), [reaction_264](#), [reaction_283](#)).

$$\frac{d}{dt}\text{species_47} = v_{173} + v_{258} + v_{260} + v_{265} + v_{284} - v_{189} - v_{273} - v_{274} - v_{275} - v_{280} \quad (885)$$

9.49 Species [species_48](#)

Name camR_ca3_BCD_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_189](#), [reaction_275](#), [reaction_276](#), [reaction_277](#), [reaction_278](#) and as a product in [reaction_173](#), [reaction_261](#), [reaction_263](#), [reaction_265](#), [reaction_282](#)).

$$\frac{d}{dt}\text{species_48} = v_{174} + v_{262} + v_{264} + v_{266} + v_{283} - v_{190} - v_{276} - v_{277} - v_{278} - v_{279} \quad (886)$$

9.50 Species [species_49](#)

Name camR_ca4_ABCD_CaMKII

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_190](#), [reaction_282](#), [reaction_283](#), [reaction_284](#), [reaction_285](#) and as a product in [reaction_174](#), [reaction_278](#), [reaction_279](#), [reaction_280](#), [reaction_281](#)).

$$\frac{d}{dt}\text{species_49} = v_{175} + v_{279} + v_{280} + v_{281} + v_{282} - v_{191} - v_{283} - v_{284} - v_{285} - v_{286} \quad (887)$$

9.51 Species [species_50](#)

Name PP2B

SBO:0000297 protein complex

Initial concentration $1.6 \cdot 10^{-6} \text{ mol} \cdot \text{l}^{-1}$

This species takes part in 32 reactions (as a reactant in [reaction_191](#), [reaction_192](#), [reaction_193](#), [reaction_194](#), [reaction_195](#), [reaction_196](#), [reaction_197](#), [reaction_198](#), [reaction_199](#), [reaction_200](#), [reaction_201](#), [reaction_202](#), [reaction_203](#), [reaction_204](#), [reaction_205](#), [reaction_206](#) and as a product in [reaction_207](#), [reaction_208](#), [reaction_209](#), [reaction_210](#), [reaction_211](#), [reaction_212](#), [reaction_213](#), [reaction_214](#), [reaction_215](#), [reaction_216](#), [reaction_217](#), [reaction_218](#), [reaction_219](#), [reaction_220](#), [reaction_221](#), [reaction_222](#)).

$$\begin{aligned} \frac{d}{dt}\text{species_50} = & v_{208} + v_{209} + v_{210} + v_{211} + v_{212} + v_{213} + v_{214} + v_{215} \\ & + v_{216} + v_{217} + v_{218} + v_{219} + v_{220} + v_{221} + v_{222} + v_{223} \\ & - v_{192} - v_{193} - v_{194} - v_{195} - v_{196} - v_{197} - v_{198} - v_{199} \\ & - v_{200} - v_{201} - v_{202} - v_{203} - v_{204} - v_{205} - v_{206} - v_{207} \end{aligned} \quad (888)$$

9.52 Species [species_51](#)

Name camR_PP2B

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_207](#), [reaction_286](#), [reaction_287](#), [reaction_288](#), [reaction_289](#) and as a product in [reaction_191](#), [reaction_290](#), [reaction_291](#), [reaction_292](#), [reaction_293](#)).

$$\frac{d}{dt}\text{species_51} = v_{192} + v_{291} + v_{292} + v_{293} + v_{294} - v_{208} - v_{287} - v_{288} - v_{289} - v_{290} \quad (889)$$

9.53 Species *species_52*

Name camR_cal_A_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_208](#), [reaction_290](#), [reaction_294](#), [reaction_295](#), [reaction_296](#) and as a product in [reaction_192](#), [reaction_286](#), [reaction_307](#), [reaction_309](#), [reaction_311](#)).

$$\frac{d}{dt}\text{species_52} = v_{193} + v_{287} + v_{308} + v_{310} + v_{312} - v_{209} - v_{291} - v_{295} - v_{296} - v_{297} \quad (890)$$

9.54 Species *species_53*

Name camR_cal_B_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_209](#), [reaction_291](#), [reaction_297](#), [reaction_298](#), [reaction_299](#) and as a product in [reaction_193](#), [reaction_287](#), [reaction_306](#), [reaction_313](#), [reaction_315](#)).

$$\frac{d}{dt}\text{species_53} = v_{194} + v_{288} + v_{307} + v_{314} + v_{316} - v_{210} - v_{292} - v_{298} - v_{299} - v_{300} \quad (891)$$

9.55 Species *species_54*

Name camR_cal_C_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_210](#), [reaction_292](#), [reaction_300](#), [reaction_301](#), [reaction_302](#) and as a product in [reaction_194](#), [reaction_288](#), [reaction_308](#), [reaction_312](#), [reaction_317](#)).

$$\frac{d}{dt}\text{species_54} = v_{195} + v_{289} + v_{309} + v_{313} + v_{318} - v_{211} - v_{293} - v_{301} - v_{302} - v_{303} \quad (892)$$

9.56 Species species_55

Name camR_ca1_D_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_211](#), [reaction_293](#), [reaction_303](#), [reaction_304](#), [reaction_305](#) and as a product in [reaction_195](#), [reaction_289](#), [reaction_310](#), [reaction_314](#), [reaction_316](#)).

$$\frac{d}{dt}\text{species_55} = v_{196} + v_{290} + v_{311} + v_{315} + v_{317} - v_{212} - v_{294} - v_{304} - v_{305} - v_{306} \quad (893)$$

9.57 Species species_56

Name camR_ca2_AB_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_212](#), [reaction_306](#), [reaction_307](#), [reaction_318](#), [reaction_319](#) and as a product in [reaction_196](#), [reaction_294](#), [reaction_297](#), [reaction_332](#), [reaction_335](#)).

$$\frac{d}{dt}\text{species_56} = v_{197} + v_{295} + v_{298} + v_{333} + v_{336} - v_{213} - v_{307} - v_{308} - v_{319} - v_{320} \quad (894)$$

9.58 Species species_57

Name camR_ca2_AC_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_213](#), [reaction_308](#), [reaction_309](#), [reaction_320](#), [reaction_321](#) and as a product in [reaction_197](#), [reaction_295](#), [reaction_300](#), [reaction_331](#), [reaction_338](#)).

$$\frac{d}{dt}\text{species_57} = v_{198} + v_{296} + v_{301} + v_{332} + v_{339} - v_{214} - v_{309} - v_{310} - v_{321} - v_{322} \quad (895)$$

9.59 Species `species_58`

Name `camR_ca2_AD_PP2B`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_214](#), [reaction_310](#), [reaction_311](#), [reaction_322](#), [reaction_323](#) and as a product in [reaction_198](#), [reaction_296](#), [reaction_303](#), [reaction_334](#), [reaction_337](#)).

$$\frac{d}{dt}\text{species_58} = v_{199} + v_{297} + v_{304} + v_{335} + v_{338} - v_{215} - v_{311} - v_{312} - v_{323} - v_{324} \quad (896)$$

9.60 Species `species_59`

Name `camR_ca2_BC_PP2B`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_215](#), [reaction_312](#), [reaction_313](#), [reaction_324](#), [reaction_325](#) and as a product in [reaction_199](#), [reaction_298](#), [reaction_301](#), [reaction_330](#), [reaction_341](#)).

$$\frac{d}{dt}\text{species_59} = v_{200} + v_{299} + v_{302} + v_{331} + v_{342} - v_{216} - v_{313} - v_{314} - v_{325} - v_{326} \quad (897)$$

9.61 Species `species_60`

Name `camR_ca2_BD_PP2B`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_216](#), [reaction_314](#), [reaction_315](#), [reaction_326](#), [reaction_327](#) and as a product in [reaction_200](#), [reaction_299](#), [reaction_304](#), [reaction_333](#), [reaction_340](#)).

$$\frac{d}{dt}\text{species_60} = v_{201} + v_{300} + v_{305} + v_{334} + v_{341} - v_{217} - v_{315} - v_{316} - v_{327} - v_{328} \quad (898)$$

9.62 Species `species_61`

Name `camR_ca2_CD_PP2B`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_217](#), [reaction_316](#), [reaction_317](#), [reaction_328](#), [reaction_329](#) and as a product in [reaction_201](#), [reaction_302](#), [reaction_305](#), [reaction_336](#), [reaction_339](#)).

$$\frac{d}{dt}\text{species_61} = v_{202} + v_{303} + v_{306} + v_{337} + v_{340} - v_{218} - v_{317} - v_{318} - v_{329} - v_{330} \quad (899)$$

9.63 Species `species_62`

Name `camR_ca3_ABC_PP2B`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_218](#), [reaction_330](#), [reaction_331](#), [reaction_332](#), [reaction_342](#) and as a product in [reaction_202](#), [reaction_318](#), [reaction_320](#), [reaction_324](#), [reaction_349](#)).

$$\frac{d}{dt}\text{species_62} = v_{203} + v_{319} + v_{321} + v_{325} + v_{350} - v_{219} - v_{331} - v_{332} - v_{333} - v_{343} \quad (900)$$

9.64 Species `species_63`

Name `camR_ca3_ABD_PP2B`

SBO:0000297 protein complex

Initial concentration $0 \text{ mol} \cdot \text{l}^{-1}$

This species takes part in ten reactions (as a reactant in [reaction_219](#), [reaction_333](#), [reaction_334](#), [reaction_335](#), [reaction_343](#) and as a product in [reaction_203](#), [reaction_319](#), [reaction_322](#), [reaction_326](#), [reaction_348](#)).

$$\frac{d}{dt}\text{species_63} = v_{204} + v_{320} + v_{323} + v_{327} + v_{349} - v_{220} - v_{334} - v_{335} - v_{336} - v_{344} \quad (901)$$

9.65 Species *species_64*

Name camR_ca3_ACD_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_220](#), [reaction_336](#), [reaction_337](#), [reaction_338](#), [reaction_344](#) and as a product in [reaction_204](#), [reaction_321](#), [reaction_323](#), [reaction_328](#), [reaction_347](#)).

$$\frac{d}{dt}\text{species_64} = v_{205} + v_{322} + v_{324} + v_{329} + v_{348} - v_{221} - v_{337} - v_{338} - v_{339} - v_{345} \quad (902)$$

9.66 Species *species_65*

Name camR_ca3_BCD_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_221](#), [reaction_339](#), [reaction_340](#), [reaction_341](#), [reaction_345](#) and as a product in [reaction_205](#), [reaction_325](#), [reaction_327](#), [reaction_329](#), [reaction_346](#)).

$$\frac{d}{dt}\text{species_65} = v_{206} + v_{326} + v_{328} + v_{330} + v_{347} - v_{222} - v_{340} - v_{341} - v_{342} - v_{346} \quad (903)$$

9.67 Species *species_66*

Name camR_ca4_ABCD_PP2B

SBO:0000297 protein complex

Initial concentration 0 mol · l⁻¹

This species takes part in ten reactions (as a reactant in [reaction_222](#), [reaction_346](#), [reaction_347](#), [reaction_348](#), [reaction_349](#) and as a product in [reaction_206](#), [reaction_342](#), [reaction_343](#), [reaction_344](#), [reaction_345](#)).

$$\frac{d}{dt}\text{species_66} = v_{207} + v_{343} + v_{344} + v_{345} + v_{346} - v_{223} - v_{347} - v_{348} - v_{349} - v_{350} \quad (904)$$

A Glossary of Systems Biology Ontology Terms

SBO:0000177 non-covalent binding: Interaction between several biochemical entities that results in the formation of a non-covalent complex

SBO:0000180 dissociation: Transformation of a non-covalent complex that results in the formation of several independent biochemical entities

SBO:0000181 conformational transition: Biochemical reaction that does not result in the modification of covalent bonds of reactants, but rather modifies the conformation of some reactants, that is the relative position of their atoms in space

SBO:0000252 polypeptide chain: Naturally occurring macromolecule formed by the repetition of amino-acid residues linked by peptidic bonds. A polypeptide chain is synthesized by the ribosome. CHEBI:1654

SBO:0000290 physical compartment: Specific location of space, that can be bounded or not. A physical compartment can have 1, 2 or 3 dimensions

SBO:0000297 protein complex: Macromolecular complex containing one or more polypeptide chains possibly associated with simple chemicals. CHEBI:3608

SBO:0000327 non-macromolecular ion: Chemical entity having a net electric charge

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