SBML Model Report

Model name: "Li2012 Ca_mediated_synaptic_plasticity"

March 9, 2017

1 General Overview

This is a document in SBML Level 2 Version 4 format. This model was created by the following three authors: Lu Li[1], Yubin Xie[2] and Pnar Pir[3] at December tenth 2015 at 12:35 a. m. and last time modified at March eighth 2017 at 11:51 p. m. Table 1 provides an overview of the quantities of all components of this model.

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

Element	Quantity	Element	Quantity
compartment types	0	compartments	1
species types	0	species	135
events	3	constraints	0
reactions	587	function definitions	3
global parameters	149	unit definitions	0
rules	94	initial assignments	8

2 Unit Definitions

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

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2.1 Unit `substance`

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

Definition mol

2.2 Unit `volume`

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

Definition l

2.3 Unit `area`

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

Definition m^2

2.4 Unit `length`

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

Definition m

2.5 Unit `time`

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

Definition s

3 Compartment

This model contains one compartment.

Table 2: Properties of all compartments.

Id	Name	SBO	Spatial Dimensions	Size	Unit	Constant	Outside
Spine	Spine		3	10^{-15}	l	☑	

3.1 Compartment `Spine`

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

Name Spine

4 Species

This model contains 135 species. Section 11 provides further details and the derived rates of change of each species.

Table 3: Properties of each species.

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
CamR	CamR	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT	CamT	Spine	$mol \cdot l^{-1}$	⊟	⊟
Ca	Ca	Spine	$mol \cdot l^{-1}$	⊟	⊟
CaMKII	CaMKII	Spine	$mol \cdot l^{-1}$	⊟	⊟
PP2B	PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
D	D	Spine	$mol \cdot l^{-1}$	⊟	⊟
PKA	PKA	Spine	$mol \cdot l^{-1}$	⊟	⊟
PP1a	PP1a	Spine	$mol \cdot l^{-1}$	⊟	⊟
CBPfast	CBP_fast	Spine	$mol \cdot l^{-1}$	⊟	⊟
CBPmedia	CBP_media	Spine	$mol \cdot l^{-1}$	⊟	⊟
CBPslow	CBP_slow	Spine	$mol \cdot l^{-1}$	⊟	⊟
CBPvslow	CBP_vslow	Spine	$mol \cdot l^{-1}$	⊟	⊟
CBPfastCa	CBP_fast_Ca	Spine	$mol \cdot l^{-1}$	⊟	⊟
CBPmediaCa	CBP_media_Ca	Spine	$mol \cdot l^{-1}$	⊟	⊟
CBPslowCa	CBP_slow_Ca	Spine	$mol \cdot l^{-1}$	⊟	⊟
CBPvslowCa	CBP_vslow_Ca	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca1_A	CamR_Ca1_A	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca1_B	CamR_Ca1_B	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca1_C	CamR_Ca1_C	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca1_D	CamR_Ca1_D	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca2_AB	CamR_Ca2_AB	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca2_AC	CamR_Ca2_AC	Spine	$mol \cdot l^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
CamR_Ca2_AD	CamR_Ca2_AD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca2_BC	CamR_Ca2_BC	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca2_BD	CamR_Ca2_BD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca2_CD	CamR_Ca2_CD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca3_ABC	CamR_Ca3_ABC	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca3_ABD	CamR_Ca3_ABD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca3_ACD	CamR_Ca3_ACD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca3_BCD	CamR_Ca3_BCD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca4_ABCD	CamR_Ca4_ABCD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca1_A	CamT_Ca1_A	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca1_B	CamT_Ca1_B	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca1_C	CamT_Ca1_C	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca1_D	CamT_Ca1_D	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca2_AB	CamT_Ca2_AB	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca2_AC	CamT_Ca2_AC	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca2_AD	CamT_Ca2_AD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca2_BC	CamT_Ca2_BC	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca2_BD	CamT_Ca2_BD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca2_CD	CamT_Ca2_CD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca3_ABC	CamT_Ca3_ABC	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca3_ABD	CamT_Ca3_ABD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca3_ACD	CamT_Ca3_ACD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca3_BCD	CamT_Ca3_BCD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamT_Ca4_ABCD	CamT_Ca4_ABCD	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_CaMKII	CamR_CaMKII	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	Spine	$mol \cdot l^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca3_ABC-_CaMKII	CamR_Ca3_ABC_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca3_ABD-_CaMKII	CamR_Ca3_ABD_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca3_ACD-_CaMKII	CamR_Ca3_ACD_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca3_BCD-_CaMKII	CamR_Ca3_BCD_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca4_ABCD-_CaMKII	CamR_Ca4_ABCD_CaMKII	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_PP2B	CamR_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	Spine	$\mathrm{mol \cdot l^{-1}}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	Spine	mol·l^{-1}	⊟	⊟
CaMKIIp	CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_CaMKIIp	CamR_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_AB-_CaMKIIp	CamR_Ca2_AB_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_AC-_CaMKIIp	CamR_Ca2_AC_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_AD-_CaMKIIp	CamR_Ca2_AD_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_BC-_CaMKIIp	CamR_Ca2_BC_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_BD-_CaMKIIp	CamR_Ca2_BD_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_CD-_CaMKIIp	CamR_Ca2_CD_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_ABC-_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	Spine	mol·l^{-1}	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
CamR_Ca3_ABD-_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca3_ACD-_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca3_BCD-_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	Spine	$mol \cdot l^{-1}$	⊟	⊟
CamR_Ca4_ABCD-_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp	Dp	Spine	$mol \cdot l^{-1}$	⊟	⊟
D_PKA	D_PKA	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_PP2B	Dp_CamR_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca1_A_PP2B	Dp_CamR_Ca1_A_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca1_B_PP2B	Dp_CamR_Ca1_B_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca1_C_PP2B	Dp_CamR_Ca1_C_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca1_D_PP2B	Dp_CamR_Ca1_D_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca2_AB-_PP2B	Dp_CamR_Ca2_AB_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca2_AC-_PP2B	Dp_CamR_Ca2_AC_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca2_AD-_PP2B	Dp_CamR_Ca2_AD_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca2_BC-_PP2B	Dp_CamR_Ca2_BC_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca2_BD-_PP2B	Dp_CamR_Ca2_BD_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟
Dp_CamR_Ca2_CD-_PP2B	Dp_CamR_Ca2_CD_PP2B	Spine	$mol \cdot l^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
Dp_CamR_Ca3_ABC-_PP2B	Dp_CamR_Ca3_ABC_PP2B	Spine	mol·l^{-1}	⊟	⊟
Dp_CamR_Ca3_ABD-_PP2B	Dp_CamR_Ca3_ABD_PP2B	Spine	mol·l^{-1}	⊟	⊟
Dp_CamR_Ca3_ACD-_PP2B	Dp_CamR_Ca3_ACD_PP2B	Spine	mol·l^{-1}	⊟	⊟
Dp_CamR_Ca3_BCD-_PP2B	Dp_CamR_Ca3_BCD_PP2B	Spine	mol·l^{-1}	⊟	⊟
Dp_CamR_Ca4_ABCD-_PP2B	Dp_CamR_Ca4_ABCD_PP2B	Spine	mol·l^{-1}	⊟	⊟
PP1a_Dp	PP1a_Dp	Spine	mol·l^{-1}	⊟	⊟
CaMKIIp_PP1a	CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_CaMKIIp_PP1a	CamR_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca1_A-_CaMKIIp_PP1a	CamR_Ca1_A_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca1_B-_CaMKIIp_PP1a	CamR_Ca1_B_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca1_C-_CaMKIIp_PP1a	CamR_Ca1_C_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca1_D-_CaMKIIp_PP1a	CamR_Ca1_D_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_AB-_CaMKIIp_PP1a	CamR_Ca2_AB_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_AC-_CaMKIIp_PP1a	CamR_Ca2_AC_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_AD-_CaMKIIp_PP1a	CamR_Ca2_AD_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
CamR_Ca2_BC-_CaMKIIp_PP1a	CamR_Ca2_BC_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_BD-_CaMKIIp_PP1a	CamR_Ca2_BD_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca2_CD-_CaMKIIp_PP1a	CamR_Ca2_CD_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_ABC-_CaMKIIp_PP1a	CamR_Ca3_ABC_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_ABD-_CaMKIIp_PP1a	CamR_Ca3_ABD_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_ACD-_CaMKIIp_PP1a	CamR_Ca3_ACD_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca3_BCD-_CaMKIIp_PP1a	CamR_Ca3_BCD_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
CamR_Ca4_ABCD-_CaMKIIp_PP1a	CamR_Ca4_ABCD_CaMKIIp_PP1a	Spine	mol·l^{-1}	⊟	⊟
PP2Bi	PP2Bi	Spine	mol·l^{-1}	⊟	⊟
PP2Bi_Ca1	PP2Bi_Ca1	Spine	mol·l^{-1}	⊟	⊟
PP2Bi_Ca2	PP2Bi_Ca2	Spine	mol·l^{-1}	⊟	⊟
PP2Bi_Ca3	PP2Bi_Ca3	Spine	mol·l^{-1}	⊟	⊟

5 Parameters

This model contains 149 global parameters.

Table 4: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
Cam_Ca0-_total_0	Cam_Ca0_total		$3.000145 \cdot 10^{-5}$		⊟
Cam_Ca0-_total_ratio	Cam_Ca0_total-_ratio		1.000		⊟
Cam_total	Cam_total		$3.000145 \cdot 10^{-5}$		☑
Cam_Ca1-_total	Cam_Ca1_total		0.000		⊟
Cam_Ca1-_total_ratio	Cam_Ca1_total-_ratio		0.000		⊟
Cam_Ca2-_total	Cam_Ca2_total		0.000		⊟
Cam_Ca2-_total_ratio	Cam_Ca2_total-_ratio		0.000		⊟
Cam_Ca3-_total	Cam_Ca3_total		0.000		⊟
Cam_Ca3-_total_ratio	Cam_Ca3_total-_ratio		0.000		⊟
Cam_Ca4-_total	Cam_Ca4_total		0.000		⊟
Cam_Ca4-_total_ratio	Cam_Ca4_total-_ratio		0.000		⊟
CamCaMKII-_bar	CamCaMKII_bar		0.000		⊟
CaMKII_CamR-_Ca1_total	CaMKII_CamR-_Ca1_total		0.000		⊟
CaMKII_CamR-_Ca2_total	CaMKII_CamR-_Ca2_total		0.000		⊟
CaMKII_CamR-_Ca3_total	CaMKII_CamR-_Ca3_total		0.000		⊟
CaMKII-_active_ratio	CaMKII_active-_ratio		0.000		⊟
CaMKIIp_bar	CaMKIIp_bar		0.000		⊟
CamPP2B_bar	CamPP2B_bar		0.000		⊟
CamR_Ca0-_ratio	CamR_Ca0_ratio		$4.83309973351288 \cdot 10^{-5}$		⊟
CamR_Ca0-_total	CamR_Ca0_total		$1.45 \cdot 10^{-9}$		⊟

Id	Name	SBO	Value	Unit	Constant
CamR_Ca2_ratio	CamR_Ca2_ratio		0.000		⊟
CamR_Ca2_total	CamR_Ca2_total		0.000		⊟
CamR_Ca3_ratio	CamR_Ca3_ratio		0.000		⊟
CamR_Ca3_total	CamR_Ca3_total		0.000		⊟
CamR_Ca4_ratio	CamR_Ca4_ratio		0.000		⊟
CamR_Ca4_total	CamR_Ca4_total		0.000		⊟
CamR_unbound	CamR_unbound		$1.45 \cdot 10^{-9}$		⊟
CBP_fast_bar	CBP_fast_bar		0.000		⊟
CBP_fast_total	CBP_fast_total		$8 \cdot 10^{-5}$		⊟
CBP_media_bar	CBP_media_bar		0.000		⊟
CBP_media_total	CBP_media_total		$8 \cdot 10^{-5}$		⊟
CBP_slow_bar	CBP_slow_bar		0.000		⊟
CBP_slow_total	CBP_slow_total		$2 \cdot 10^{-5}$		⊟
CBP_vslow_bar	CBP_vslow_bar		0.000		⊟
CBP_vslow_total	CBP_vslow_total		$2 \cdot 10^{-5}$		⊟
Dp_bar	Dp_bar		0.000		⊟
Epsilon	Epsilon		$4.83309973351288 \cdot 10^{-5}$		⊟
Free_Cam_Ca0_total	Free_Cam_Ca0_total		$3.000145 \cdot 10^{-5}$		⊟
Free_Cam_Ca1_total	Free_Cam_Ca1_total		0.000		⊟
Free_Cam_Ca2_total	Free_Cam_Ca2_total		0.000		⊟
Free_Cam_Ca3_total	Free_Cam_Ca3_total		0.000		⊟
Free_Cam_Ca4_total	Free_Cam_Ca4_total		0.000		⊟
Free_CamR_Ca1_total	Free_CamR_Ca1_total		0.000		⊟

Id	Name	SBO	Value	Unit	Constant
Free_CamR-_Ca2_total	Free_CamR_Ca2-_total		0.000		⊟
Free_CamR-_Ca3_total	Free_CamR_Ca3-_total		0.000		⊟
Free_CamT-_Ca1_total	Free_CamT_Ca1-_total		0.000		⊟
Free_CamT-_Ca2_total	Free_CamT_Ca2-_total		0.000		⊟
Free_CamT-_Ca3_total	Free_CamT_Ca3-_total		0.000		⊟
moles_bound-_Ca_per-_moles_Cam	moles_bound_Ca-_per_moles_Cam		0.000		⊟
PKA_bar	PKA_bar		0.010		⊟
PKA_inmodel	PKA_inmodel		$1.2 \cdot 10^{-8}$		⊟
PP1a_bar	PP1a_bar		1.000		⊟
Dp_0_PP2B-_CamR_Ca1	Dp_boundOrnot-_PP2B_CamR_Ca1		0.000		⊟
Dp_0_PP2B-_CamR_Ca2	Dp_boundOrnot-_PP2B_CamR_Ca2		0.000		⊟
Dp_0_PP2B-_CamR_Ca3	Dp_boundOrnot-_PP2B_CamR_Ca3		0.000		⊟
PP2B_bar	PP2B_bar		0.000		⊟
CamR_ratio	CamR_ratio		$4.83309973351288 \cdot 10^{-5}$		⊟
CaMKII-_bound_total	CaMKII_bound-_total		0.000		⊟
CaMKIIp-_total	CaMKIIp_total		0.000		⊟
PP2B_bound-_total	PP2B_bound_total		0.000		⊟
CamR_total	CamR_total		$1.45 \cdot 10^{-9}$		⊟
CamT_total	CamT_total		$3 \cdot 10^{-5}$		⊟
PP2B_total	PP2B_total		$6 \cdot 10^{-6}$		⊟
D_total	D_total		$3 \cdot 10^{-6}$		⊟
Dp_total	Dp_total		0.000		⊟
PKA_total	PKA_total		$1.2 \cdot 10^{-6}$		☑
PP1a_total	PP1a_total		$2 \cdot 10^{-6}$		⊟
y_bar	y_bar		0.000		⊟
y_bar_div_1-_minus_ybar	y_bar_div_1_minus-_ybar		0.000		⊟
CamR_Ca1-_ratio	CamR_Ca1_ratio		0.000		⊟

Id	Name	SBO	Value	Unit	Constant
CamR_Ca1-_total	CamR_Ca1_total		0.000		⊟
PP1_total	PP1_total		$2 \cdot 10^{-6}$		⊟
K_CBPslow-_Ca_off	koff_CBPslow_Ca		10.000		☑
K_CamR-_CaMKII_p_on	kon_CamR-_CaMKII		3200000.000		☑
K_D_PKA_off_p	kcat_D_PKA		2.700		☑
K_CamMKIIp-_PP1a_on	kon_CamMKIIp-_PP1a		3000000.000		☑
K_CamMKIIp-_PP1a_off	koff_CamMKIIp-_PP1a		0.500		☑
K_CamMKIIp-_PP1a_p_off	kcat_CaMKIIp-_PP1a		2.000		☑
K_CBPslow-_Ca_on	kon_CBPslow_Ca		10^7		☑
K_CBPvslow-_Ca_off	koff_CBPvslow_Ca		1.000		☑
K_CBPvslow-_Ca_on	kon_CBPvslow_Ca		1000000.000		☑
K_Cam_Ca_on	kon_Cam_Ca		1400000.000		☑
K_CamT_Ca_A-_off	koff_CamT_Ca_A		2941.414		⊟
K_CamT_Ca_B-_off	koff_CamT_Ca_B		5.869		⊟
K_CamT_Ca_C-_off	koff_CamT_Ca_C		6151.515		⊟
K_CamT_Ca_D-_off	koff_CamT_Ca_D		5.126		⊟
K_CamR_T	k_CamR_T		1000000.007		⊟
K_CamT_R	k_CamT_R		48.379		☑
K_CamR-_CaMKII_off	koff_CamR-_CaMKII		0.343		☑
K_CamR_PP2B-_on	kon_CamR_PP2B		$4.6 \cdot 10^7$		☑
K_CamR_PP2B-_off	koff_CamR_PP2B		0.400		☑
K_CamR_Ca_C-_off	koff_CamR_Ca_C		24.360		⊟
K_CamR_Ca_D-_off	koff_CamR_Ca_D		0.020		⊟

Id	Name	SBO	Value	Unit	Constant
K_CamR_Ca_A-_off	koff_CamR_Ca_A		11.648		⊟
K_CamR_Ca_B-_off	koff_CamR_Ca_B		0.023		⊟
K_CamR-_CaMKIIp_off	koff_CamR-_CaMKIIp		0.001		☑
K_D_PKA_on	kon_D_PKA		5600000.000		☑
K_D_PKA_off	koff_D_PKA		10.800		☑
K_CamR_PP2B-_Dp_on	kon_CamR_PP2B-_Dp		4100000.000		☑
K_CamR_PP2B-_Dp_off	koff_CamR_PP2B-_Dp		6.400		☑
K_CamR_PP2B-_D_off	kcat_CamR_PP2B-_Dp		0.200		☑
K_PP1a_Dp_on	kon_PP1a_Dp		4000000.000		☑
K_PP1a_Dp_off	koff_PP1a_Dp		0.400		☑
K_CBP_fast_on	kon_CBPfast_Ca		10^9		☑
K_CBP_fast-_off	koff_CBPfast_Ca		1000.000		☑
K_CBP_media-_on	kon_CBPmedia_Ca		10^8		☑
K_CBP_media-_off	koff_CBPmedia-_Ca		100.000		☑
K_PP2Bi_Ca_on	kon_PP2Bi_Ca		$2 \cdot 10^7$		☑
K_PP2Bi_Ca1-_Ca_off	koff_PP2Bi_Ca		0.009		☑
K_PP2Bi_Ca2-_Ca_off	koff_PP2Bi_Ca1-_Ca		0.031		☑
K_PP2Bi_Ca3-_Ca_off	koff_PP2Bi_Ca2-_Ca		0.352		☑
K_PP2B_Ca_off	koff_PP2Bi_Ca3-_Ca		0.900		☑
K_CamR_to_T-_Ca2	k_CamR_to_T_Ca2		3960.000		⊟
C_A_B_C_D	C_ABCD		0.004		☑
K_CamT_to_R-_Ca2	k_CamT_to_R_Ca2		12216.993		⊟
K_CamR_to_T-_Ca1	k_CamR_to_T_Ca1		62928.531		⊟
K_CamT_to_R-_Ca1	k_CamT_to_R_Ca1		768.797		⊟

Id	Name	SBO	Value	Unit	Constant
K_CamR_to_T_Ca3	k_CamR_to_T_Ca3		249.197		⊟
K_CamT_to_R_Ca3	k_CamT_to_R_Ca3		194140.770		⊟
K_CamR_to_T_Ca4	k_CamR_to_T_Ca4		15.682		⊟
K_CamT_to_R_Ca4	k_CamT_to_R_Ca4		3085099.352		⊟
PKA_initial	PKA_initial		$1.2 \cdot 10^{-8}$		⊟
K_CaMKII_autoPhosphorylation	k_CaMKII_autoPhosphorylation		0.000		⊟
k_for_CaMKII_autophosphorylation	kmax_CaMKII_autophosphorylation		6.300		☑
CaMKII_total	CaMKII_total		$7 \cdot 10^{-5}$		⊟
CaMKII_active_total	CaMKII_active_total		0.000		⊟
PP2B_non_i	PP2B_non_i		0.000		⊟
parameter_1	k_Ca_in		0.000		⊟
parameter_2	equilibriumTime		300.000		☑
parameter_3	spikeCounter		0.000		⊟
parameter_4	spikeNumber		100.000		☑
parameter_5	spikeFrequency		52.800		☑
parameter_6	spikeOn		0.000		⊟
parameter_7	startTime		0.000		⊟
parameter_8	spikeInput		0.007		⊟
parameter_9	spikeInputDuration		0.008		⊟
parameter_10	KRA		$8.32 \cdot 10^{-6}$		☑
parameter_11	KRB		$1.66 \cdot 10^{-8}$		☑
parameter_12	KRC		$1.74 \cdot 10^{-5}$		☑
parameter_13	KRD		$1.45 \cdot 10^{-8}$		☑
parameter_14	L		20670.000		☑
Metabolite_8	Initial for CBP_fast		$8 \cdot 10^{-5}$		☑
Metabolite_9	Initial for CBP_media		$8 \cdot 10^{-5}$		☑
Metabolite_10	Initial for CBP_slow		$2 \cdot 10^{-5}$		☑
Metabolite_11	Initial for CBP_vslow		$2 \cdot 10^{-5}$		☑
Metabolite_6	Initial for PKA		$1.2 \cdot 10^{-8}$		☑
ModelValue_128	Initial for equilibriumTime		300.000		☑

Id	Name	SBO	Value	Unit	Constant
ModelValue-_131	Initial for spikeFrequency		52.800		☑
ModelValue-_130	Initial for spikeNumber		100.000		☑

6 Initialassignments

This is an overview of eight initialassignments.

6.1 Initialassignment Metabolite_8

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

Math [CBPfast]

6.2 Initialassignment Metabolite_9

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

Math [CBPmedia]

6.3 Initialassignment Metabolite_10

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

Math [CBPslow]

6.4 Initialassignment Metabolite_11

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

Math [CBPvslow]

6.5 Initialassignment Metabolite_6

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

Math [PKA]

6.6 Initialassignment ModelValue_128

Derived unit contains undeclared units

Math parameter_2

6.7 Initialassignment `ModelValue_131`

Derived unit contains undeclared units

Math parameter_5

6.8 Initialassignment `ModelValue_130`

Derived unit contains undeclared units

Math parameter_4

7 Function definitions

This is an overview of three function definitions.

7.1 Function definition `MAX`

Arguments a, b

Mathematical Expression

$$
\begin{cases} a & \text{if } a \geq b \\ b & \text{otherwise} \end{cases} \tag{1}
$$

7.2 Function definition `function_1`

Name Constant flux (irreversible)

Argument v

Mathematical Expression

$$
v \tag{2}
$$

7.3 Function definition `Function_for_Ca_pump`

Name Function for Ca_pump

Arguments [Ca], km, vmax

Mathematical Expression

$$
\text{vmax} \cdot \frac{[\text{Ca}]}{[\text{Ca}] + \text{km}} \tag{3}
$$

8 Rules

This is an overview of 94 rules.

8.1 Rule Cam_Ca0_total_0

Rule Cam_Ca0_total_0 is an assignment rule for parameter Cam_Ca0_total_0:

$$
\begin{aligned}
\text{Cam\_Ca0\_total\_0} = {} & [\text{CamR}] + [\text{CamT}] + [\text{CamR\_CaMKIIp}] + [\text{CamR\_CaMKII}] \\
& + [\text{CamR\_PP2B}] + [\text{Dp\_CamR\_PP2B}] + [\text{CamR\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{4}
$$

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

8.2 Rule Cam_Ca0_total_ratio

Rule Cam_Ca0_total_ratio is an assignment rule for parameter Cam_Ca0_total_ratio:

$$
\text{Cam\_Ca0\_total\_ratio} = \frac{\text{Cam\_Ca0\_total\_0}}{\text{Cam\_total}}
\tag{5}
$$

8.3 Rule Cam_Ca4_total

Rule Cam_Ca4_total is an assignment rule for parameter Cam_Ca4_total:

$$
\begin{aligned}
\text{Cam\_Ca4\_total} = {} & [\text{CamR\_Ca4\_ABCD}] + [\text{CamT\_Ca4\_ABCD}] + [\text{CamR\_Ca4\_ABCD\_CaMKII}] \\
& + [\text{CamR\_Ca4\_ABCD\_PP2B}] + [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \\
& + [\text{Dp\_CamR\_Ca4\_ABCD\_PP2B}] + [\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{6}
$$

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

8.4 Rule Cam_Ca4_total_ratio

Rule Cam_Ca4_total_ratio is an assignment rule for parameter Cam_Ca4_total_ratio:

$$
\text{Cam\_Ca4\_total\_ratio} = \frac{\text{Cam\_Ca4\_total}}{\text{Cam\_total}}
\tag{7}
$$

8.5 Rule CaMKII_CamR_Ca1_total

Rule CaMKII_CamR_Ca1_total is an assignment rule for parameter CaMKII_CamR_Ca1_total:

$$
\begin{aligned}
\text{CaMKII\_CamR\_Ca1\_total} = {} & [\text{CamR\_Ca1\_A\_CaMKII}] + [\text{CamR\_Ca1\_B\_CaMKII}] \\
& + [\text{CamR\_Ca1\_C\_CaMKII}] + [\text{CamR\_Ca1\_D\_CaMKII}] \\
& + [\text{CamR\_Ca1\_A\_CaMKIIp}] + [\text{CamR\_Ca1\_B\_CaMKIIp}] \\
& + [\text{CamR\_Ca1\_C\_CaMKIIp}] + [\text{CamR\_Ca1\_D\_CaMKIIp}] \\
& + [\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_B\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_D\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{8}
$$

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

8.6 Rule `CaMKII_CamR_Ca2_total`

Rule `CaMKII_CamR_Ca2_total` is an assignment rule for parameter `CaMKII_CamR_Ca2_total`:

$$
\begin{aligned}
\text{CaMKII\_CamR\_Ca2\_total} = \ &[\text{CamR\_Ca2\_AB\_CaMKII}] + [\text{CamR\_Ca2\_AC\_CaMKII}] \\
&+ [\text{CamR\_Ca2\_AD\_CaMKII}] + [\text{CamR\_Ca2\_BC\_CaMKII}] \\
&+ [\text{CamR\_Ca2\_BD\_CaMKII}] + [\text{CamR\_Ca2\_CD\_CaMKII}] \\
&+ [\text{CamR\_Ca2\_AB\_CaMKIIp}] + [\text{CamR\_Ca2\_AC\_CaMKIIp}] \\
&+ [\text{CamR\_Ca2\_AD\_CaMKIIp}] + [\text{CamR\_Ca2\_BC\_CaMKIIp}] \\
&+ [\text{CamR\_Ca2\_BD\_CaMKIIp}] + [\text{CamR\_Ca2\_CD\_CaMKIIp}] \\
&+ [\text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a}] \\
&+ [\text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a}] \\
&+ [\text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a}] \\
&+ [\text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a}] \\
&+ [\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a}] \\
&+ [\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{9}
$$

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

8.7 Rule `CaMKII_CamR_Ca3_total`

Rule `CaMKII_CamR_Ca3_total` is an assignment rule for parameter `CaMKII_CamR_Ca3_total`:

$$
\begin{aligned}
\text{CaMKII\_CamR\_Ca3\_total} = \ &[\text{CamR\_Ca3\_ABC\_CaMKII}] + [\text{CamR\_Ca3\_ABD\_CaMKII}] \\
&+ [\text{CamR\_Ca3\_ACD\_CaMKII}] + [\text{CamR\_Ca3\_BCD\_CaMKII}] \\
&+ [\text{CamR\_Ca3\_ABC\_CaMKIIp}] + [\text{CamR\_Ca3\_ABD\_CaMKIIp}] \\
&+ [\text{CamR\_Ca3\_ACD\_CaMKIIp}] + [\text{CamR\_Ca3\_BCD\_CaMKIIp}] \\
&+ [\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a}] \\
&+ [\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a}] \\
&+ [\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a}] \\
&+ [\text{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{10}
$$

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

8.8 Rule `CamR_Ca0_total`

Rule `CamR_Ca0_total` is an assignment rule for parameter `CamR_Ca0_total`:

$$
\begin{aligned}
\text{CamR\_Ca0\_total} = \ &[\text{CamR}] + [\text{CamR\_CaMKII}] + [\text{CamR\_PP2B}] + [\text{CamR\_CaMKIIp}] \\
&+ [\text{Dp\_CamR\_PP2B}] + [\text{CamR\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{11}
$$

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

8.9 Rule `CamR_Ca0_ratio`

Rule `CamR_Ca0_ratio` is an assignment rule for parameter `CamR_Ca0_ratio`:

$$\text{CamR\_Ca0\_ratio} = \frac{\text{CamR\_Ca0\_total}}{\text{Cam\_total}} \tag{12}$$

8.10 Rule `CamR_Ca4_total`

Rule `CamR_Ca4_total` is an assignment rule for parameter `CamR_Ca4_total`:

$$\begin{aligned}
\text{CamR\_Ca4\_total} = &\ [\text{CamR\_Ca4\_ABCD}] + [\text{CamR\_Ca4\_ABCD\_CaMKII}] \\
&+ [\text{CamR\_Ca4\_ABCD\_PP2B}] + [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \\
&+ [\text{Dp\_CamR\_Ca4\_ABCD\_PP2B}] + [\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}]
\end{aligned} \tag{13}$$

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

8.11 Rule `CamR_Ca4_ratio`

Rule `CamR_Ca4_ratio` is an assignment rule for parameter `CamR_Ca4_ratio`:

$$\text{CamR\_Ca4\_ratio} = \frac{\text{CamR\_Ca4\_total}}{\text{Cam\_total}} \tag{14}$$

8.12 Rule `CamR_unbound`

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

$$\begin{aligned}
\text{CamR\_unbound} = &\ [\text{CamR}] + [\text{CamR\_Ca1\_A}] + [\text{CamR\_Ca1\_B}] + [\text{CamR\_Ca1\_C}] \\
&+ [\text{CamR\_Ca1\_D}] + [\text{CamR\_Ca2\_AB}] + [\text{CamR\_Ca2\_AC}] \\
&+ [\text{CamR\_Ca2\_AD}] + [\text{CamR\_Ca2\_BC}] + [\text{CamR\_Ca2\_BD}] \\
&+ [\text{CamR\_Ca2\_CD}] + [\text{CamR\_Ca3\_ABC}] + [\text{CamR\_Ca3\_ABD}] \\
&+ [\text{CamR\_Ca3\_ACD}] + [\text{CamR\_Ca3\_BCD}] + [\text{CamR\_Ca4\_ABCD}]
\end{aligned} \tag{15}$$

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

8.13 Rule `CBP_fast_total`

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

$$\text{CBP\_fast\_total} = \text{Metabolite\_8} \tag{16}$$

8.14 Rule `CBP_fast_bar`

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

$$\text{CBP\_fast\_bar} = \frac{[\text{CBPfastCa}]}{\text{CBP\_fast\_total}} \tag{17}$$

8.15 Rule CBP_media_total

Rule CBP_media_total is an assignment rule for parameter CBP_media_total:

$$CBP\_media\_total = Metabolite\_9 \tag{18}$$

8.16 Rule CBP_media_bar

Rule CBP_media_bar is an assignment rule for parameter CBP_media_bar:

$$CBP\_media\_bar = \frac{[CBPmediaCa]}{CBP\_media\_total} \tag{19}$$

8.17 Rule CBP_slow_total

Rule CBP_slow_total is an assignment rule for parameter CBP_slow_total:

$$CBP\_slow\_total = Metabolite\_10 \tag{20}$$

8.18 Rule CBP_slow_bar

Rule CBP_slow_bar is an assignment rule for parameter CBP_slow_bar:

$$CBP\_slow\_bar = \frac{[CBPslowCa]}{CBP\_slow\_total} \tag{21}$$

8.19 Rule CBP_vslow_total

Rule CBP_vslow_total is an assignment rule for parameter CBP_vslow_total:

$$CBP\_vslow\_total = Metabolite\_11 \tag{22}$$

8.20 Rule CBP_vslow_bar

Rule CBP_vslow_bar is an assignment rule for parameter CBP_vslow_bar:

$$CBP\_vslow\_bar = \frac{[CBPvslowCa]}{CBP\_vslow\_total} \tag{23}$$

8.21 Rule Epsilon

Rule Epsilon is an assignment rule for parameter Epsilon:

$$Epsilon = \frac{[CamR]}{[CamR] + [CamT]} \tag{24}$$

Derived unit dimensionless

8.22 Rule Free_Cam_Ca0_total

Rule Free_Cam_Ca0_total is an assignment rule for parameter Free_Cam_Ca0_total:

$$Free\_Cam\_Ca0\_total = [CamR] + [CamT] \tag{25}$$

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

8.23 Rule Free_Cam_Ca4_total

Rule Free_Cam_Ca4_total is an assignment rule for parameter Free_Cam_Ca4_total:

$$Free\_Cam\_Ca4\_total = [CamR\_Ca4\_ABCD] + [CamT\_Ca4\_ABCD] \tag{26}$$

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

8.24 Rule Free_CamR_Ca1_total

Rule Free_CamR_Ca1_total is an assignment rule for parameter Free_CamR_Ca1_total:

$$Free\_CamR\_Ca1\_total = [CamR\_Ca1\_A] + [CamR\_Ca1\_B] + [CamR\_Ca1\_C] + [CamR\_Ca1\_D] \tag{27}$$

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

8.25 Rule Free_CamR_Ca2_total

Rule Free_CamR_Ca2_total is an assignment rule for parameter Free_CamR_Ca2_total:

$$\begin{aligned} Free\_CamR\_Ca2\_total = {} & [CamR\_Ca2\_AB] + [CamR\_Ca2\_AC] + [CamR\_Ca2\_AD] \\ & + [CamR\_Ca2\_BC] + [CamR\_Ca2\_BD] + [CamR\_Ca2\_CD] \end{aligned} \tag{28}$$

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

8.26 Rule Free_CamR_Ca3_total

Rule Free_CamR_Ca3_total is an assignment rule for parameter Free_CamR_Ca3_total:

$$\begin{aligned} Free\_CamR\_Ca3\_total = {} & [CamR\_Ca3\_ABC] + [CamR\_Ca3\_ABD] \\ & + [CamR\_Ca3\_ACD] + [CamR\_Ca3\_BCD] \end{aligned} \tag{29}$$

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

8.27 Rule Free_CamT_Ca1_total

Rule Free_CamT_Ca1_total is an assignment rule for parameter Free_CamT_Ca1_total:

$$Free\_CamT\_Ca1\_total = [CamT\_Ca1\_A] + [CamT\_Ca1\_B] + [CamT\_Ca1\_C] + [CamT\_Ca1\_D] \tag{30}$$

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

8.28 Rule `Free_Cam_Ca1_total`

Rule `Free_Cam_Ca1_total` is an assignment rule for parameter `Free_Cam_Ca1_total`:

$$\text{Free\_Cam\_Ca1\_total} = \text{Free\_CamR\_Ca1\_total} + \text{Free\_CamT\_Ca1\_total} \tag{31}$$

8.29 Rule `Free_CamT_Ca2_total`

Rule `Free_CamT_Ca2_total` is an assignment rule for parameter `Free_CamT_Ca2_total`:

$$\begin{aligned}\text{Free\_CamT\_Ca2\_total} = [\text{CamT\_Ca2\_AB}] + [\text{CamT\_Ca2\_AC}] + [\text{CamT\_Ca2\_AD}] \\ + [\text{CamT\_Ca2\_BC}] + [\text{CamT\_Ca2\_BD}] + [\text{CamT\_Ca2\_CD}]\end{aligned} \tag{32}$$

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

8.30 Rule `Free_Cam_Ca2_total`

Rule `Free_Cam_Ca2_total` is an assignment rule for parameter `Free_Cam_Ca2_total`:

$$\text{Free\_Cam\_Ca2\_total} = \text{Free\_CamR\_Ca2\_total} + \text{Free\_CamT\_Ca2\_total} \tag{33}$$

8.31 Rule `Free_CamT_Ca3_total`

Rule `Free_CamT_Ca3_total` is an assignment rule for parameter `Free_CamT_Ca3_total`:

$$\begin{aligned}\text{Free\_CamT\_Ca3\_total} = [\text{CamT\_Ca3\_ABC}] + [\text{CamT\_Ca3\_ABD}] \\ + [\text{CamT\_Ca3\_ACD}] + [\text{CamT\_Ca3\_BCD}]\end{aligned} \tag{34}$$

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

8.32 Rule `Free_Cam_Ca3_total`

Rule `Free_Cam_Ca3_total` is an assignment rule for parameter `Free_Cam_Ca3_total`:

$$\text{Free\_Cam\_Ca3\_total} = \text{Free\_CamR\_Ca3\_total} + \text{Free\_CamT\_Ca3\_total} \tag{35}$$

8.33 Rule `PKA_inmodel`

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

$$\text{PKA\_inmodel} = [\text{PKA}] + [\text{D\_PKA}] \tag{36}$$

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

8.34 Rule `PKA_bar`

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

$$\text{PKA\_bar} = \frac{\text{PKA\_inmodel}}{\text{PKA\_total}} \tag{37}$$

8.35 Rule `Dp_0_PP2B_CamR_Ca1`

Rule `Dp_0_PP2B_CamR_Ca1` is an assignment rule for parameter `Dp_0_PP2B_CamR_Ca1`:

$$
\begin{aligned}
\text{Dp\_0\_PP2B\_CamR\_Ca1} = \ & [\text{CamR\_Ca1\_A\_PP2B}] + [\text{CamR\_Ca1\_B\_PP2B}] \\
& + [\text{CamR\_Ca1\_C\_PP2B}] + [\text{CamR\_Ca1\_D\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca1\_A\_PP2B}] + [\text{Dp\_CamR\_Ca1\_B\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca1\_C\_PP2B}] + [\text{Dp\_CamR\_Ca1\_D\_PP2B}]
\end{aligned}
\tag{38}
$$

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

8.36 Rule `Cam_Ca1_total`

Rule `Cam_Ca1_total` is an assignment rule for parameter `Cam_Ca1_total`:

$$
\text{Cam\_Ca1\_total} = \text{Free\_Cam\_Ca1\_total} + \text{CaMKII\_CamR\_Ca1\_total} + \text{Dp\_0\_PP2B\_CamR\_Ca1}
\tag{39}
$$

8.37 Rule `Cam_Ca1_total_ratio`

Rule `Cam_Ca1_total_ratio` is an assignment rule for parameter `Cam_Ca1_total_ratio`:

$$
\text{Cam\_Ca1\_total\_ratio} = \frac{\text{Cam\_Ca1\_total}}{\text{Cam\_total}}
\tag{40}
$$

8.38 Rule `Dp_0_PP2B_CamR_Ca2`

Rule `Dp_0_PP2B_CamR_Ca2` is an assignment rule for parameter `Dp_0_PP2B_CamR_Ca2`:

$$
\begin{aligned}
\text{Dp\_0\_PP2B\_CamR\_Ca2} = \ & [\text{CamR\_Ca2\_AB\_PP2B}] + [\text{CamR\_Ca2\_AC\_PP2B}] \\
& + [\text{CamR\_Ca2\_AD\_PP2B}] + [\text{CamR\_Ca2\_BC\_PP2B}] \\
& + [\text{CamR\_Ca2\_BD\_PP2B}] + [\text{CamR\_Ca2\_CD\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca2\_AB\_PP2B}] + [\text{Dp\_CamR\_Ca2\_AC\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca2\_AD\_PP2B}] + [\text{Dp\_CamR\_Ca2\_BC\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca2\_BD\_PP2B}] + [\text{Dp\_CamR\_Ca2\_CD\_PP2B}]
\end{aligned}
\tag{41}
$$

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

8.39 Rule `Cam_Ca2_total`

Rule `Cam_Ca2_total` is an assignment rule for parameter `Cam_Ca2_total`:

$$
\text{Cam\_Ca2\_total} = \text{Free\_Cam\_Ca2\_total} + \text{CaMKII\_CamR\_Ca2\_total} + \text{Dp\_0\_PP2B\_CamR\_Ca2}
\tag{42}
$$

8.40 Rule `Cam_Ca2_total_ratio`

Rule `Cam_Ca2_total_ratio` is an assignment rule for parameter `Cam_Ca2_total_ratio`:

$$Cam\_Ca2\_total\_ratio = \frac{Cam\_Ca2\_total}{Cam\_total} \tag{43}$$

8.41 Rule `CamR_Ca2_total`

Rule `CamR_Ca2_total` is an assignment rule for parameter `CamR_Ca2_total`:

$$
\begin{aligned}
&CamR\_Ca2\_total \\
&\quad = Free\_CamR\_Ca2\_total + CaMKII\_CamR\_Ca2\_total + Dp\_0\_PP2B\_CamR\_Ca2
\end{aligned}
\tag{44}
$$

8.42 Rule `CamR_Ca2_ratio`

Rule `CamR_Ca2_ratio` is an assignment rule for parameter `CamR_Ca2_ratio`:

$$CamR\_Ca2\_ratio = \frac{CamR\_Ca2\_total}{Cam\_total} \tag{45}$$

8.43 Rule `Dp_0_PP2B_CamR_Ca3`

Rule `Dp_0_PP2B_CamR_Ca3` is an assignment rule for parameter `Dp_0_PP2B_CamR_Ca3`:

$$
\begin{aligned}
Dp\_0\_PP2B\_CamR\_Ca3 = {}&[CamR\_Ca3\_ABC\_PP2B] + [CamR\_Ca3\_ABD\_PP2B] \\
&+ [CamR\_Ca3\_ACD\_PP2B] + [CamR\_Ca3\_BCD\_PP2B] \\
&+ [Dp\_CamR\_Ca3\_ABC\_PP2B] + [Dp\_CamR\_Ca3\_ABD\_PP2B] \\
&+ [Dp\_CamR\_Ca3\_ACD\_PP2B] + [Dp\_CamR\_Ca3\_BCD\_PP2B]
\end{aligned}
\tag{46}
$$

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

8.44 Rule `Cam_Ca3_total`

Rule `Cam_Ca3_total` is an assignment rule for parameter `Cam_Ca3_total`:

$$Cam\_Ca3\_total = Free\_CamR\_Ca3\_total + Dp\_0\_PP2B\_CamR\_Ca3 + CaMKII\_CamR\_Ca3\_total \tag{47}$$

8.45 Rule `Cam_Ca3_total_ratio`

Rule `Cam_Ca3_total_ratio` is an assignment rule for parameter `Cam_Ca3_total_ratio`:

$$Cam\_Ca3\_total\_ratio = \frac{Cam\_Ca3\_total}{Cam\_total} \tag{48}$$

8.46 Rule `CamR_Ca3_total`

Rule `CamR_Ca3_total` is an assignment rule for parameter `CamR_Ca3_total`:

$$
\begin{aligned}
\text{CamR\_Ca3\_total} \\
= \text{Free\_CamR\_Ca3\_total} + \text{Dp\_0\_PP2B\_CamR\_Ca3} + \text{CaMKII\_CamR\_Ca3\_total}
\end{aligned}
\tag{49}
$$

8.47 Rule `CamR_Ca3_ratio`

Rule `CamR_Ca3_ratio` is an assignment rule for parameter `CamR_Ca3_ratio`:

$$
\text{CamR\_Ca3\_ratio} = \frac{\text{CamR\_Ca3\_total}}{\text{Cam\_total}}
\tag{50}
$$

8.48 Rule `moles_bound_Ca_per_moles_Cam`

Rule `moles_bound_Ca_per_moles_Cam` is an assignment rule for parameter `moles_bound_Ca-_per_moles_Cam`:

$$
\begin{aligned}
\text{moles\_bound\_Ca\_per\_moles\_Cam} \\
= \frac{4 \cdot \text{Cam\_Ca4\_total} + 3 \cdot \text{Cam\_Ca3\_total} + 2 \cdot \text{Cam\_Ca2\_total} + \text{Cam\_Ca1\_total}}{\text{Cam\_total}}
\end{aligned}
\tag{51}
$$

8.49 Rule `CaMKII_bound_total`

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

$$
\begin{aligned}
\text{CaMKII\_bound\_total} = {}& [\text{CamR\_CaMKII}] + \text{CaMKII\_CamR\_Ca1\_total} \\
& + \text{CaMKII\_CamR\_Ca2\_total} + \text{CaMKII\_CamR\_Ca3\_total} \\
& + [\text{CamR\_Ca4\_ABCD\_CaMKII}] + [\text{CamR\_CaMKIIp}] \\
& + [\text{CamR\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \\
& + [\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{52}
$$

8.50 Rule `CamCaMKII_bar`

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

$$
\text{CamCaMKII\_bar} = \frac{\text{CaMKII\_bound\_total}}{\text{Cam\_total}}
\tag{53}
$$

Produced by SBML2LATEX

8.51 Rule `CaMKIIp_total`

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

$$
\begin{aligned}
\text{CaMKIIp\_total} = {}& [\text{CaMKIIp}] + [\text{CaMKIIp\_PP1a}] + [\text{CamR\_CaMKIIp}] \\
& + [\text{CamR\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca1\_A\_CaMKIIp}] \\
& + [\text{CamR\_Ca1\_B\_CaMKIIp}] + [\text{CamR\_Ca1\_C\_CaMKIIp}] \\
& + [\text{CamR\_Ca1\_D\_CaMKIIp}] + [\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_B\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_D\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca2\_AB\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_AC\_CaMKIIp}] + [\text{CamR\_Ca2\_AD\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_BC\_CaMKIIp}] + [\text{CamR\_Ca2\_BD\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_CD\_CaMKIIp}] + [\text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca3\_ABC\_CaMKIIp}] \\
& + [\text{CamR\_Ca3\_ABD\_CaMKIIp}] + [\text{CamR\_Ca3\_ACD\_CaMKIIp}] \\
& + [\text{CamR\_Ca3\_BCD\_CaMKIIp}] + [\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \\
& + [\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{54}
$$

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

8.52 Rule `PP2B_bound_total`

Rule `PP2B_bound_total` is an assignment rule for parameter `PP2B_bound_total`:

$$
\begin{aligned}
\text{PP2B\_bound\_total} = {}& [\text{CamR\_PP2B}] + \text{Dp\_0\_PP2B\_CamR\_Ca1} + \text{Dp\_0\_PP2B\_CamR\_Ca2} \\
& + \text{Dp\_0\_PP2B\_CamR\_Ca3} + [\text{CamR\_Ca4\_ABCD\_PP2B}] \\
& + [\text{Dp\_CamR\_PP2B}] + [\text{Dp\_CamR\_Ca4\_ABCD\_PP2B}]
\end{aligned}
\tag{55}
$$

8.53 Rule `CamPP2B_bar`

Rule `CamPP2B_bar` is an assignment rule for parameter `CamPP2B_bar`:

$$
\text{CamPP2B\_bar} = \frac{\text{PP2B\_bound\_total}}{\text{Cam\_total}}
\tag{56}
$$

8.54 Rule `CamR_total`

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

$$
\text{CamR\_total} = \text{CamR\_unbound} + \text{CaMKII\_bound\_total} + \text{PP2B\_bound\_total}
\tag{57}
$$

8.55 Rule `CamT_total`

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

$$
\begin{aligned}
\text{CamT\_total} = {}& [\text{CamT}] + [\text{CamT\_Ca1\_A}] + [\text{CamT\_Ca1\_B}] + [\text{CamT\_Ca1\_C}] + [\text{CamT\_Ca1\_D}] \\
& + [\text{CamT\_Ca2\_AB}] + [\text{CamT\_Ca2\_AC}] + [\text{CamT\_Ca2\_AD}] + [\text{CamT\_Ca2\_BC}] \\
& + [\text{CamT\_Ca2\_BD}] + [\text{CamT\_Ca2\_CD}] + [\text{CamT\_Ca3\_ABC}] + [\text{CamT\_Ca3\_ABD}] \\
& + [\text{CamT\_Ca3\_ACD}] + [\text{CamT\_Ca3\_BCD}] + [\text{CamT\_Ca4\_ABCD}]
\end{aligned}
\tag{58}
$$

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

8.56 Rule `CamR_ratio`

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

$$
\text{CamR\_ratio} = \frac{\text{CamR\_total}}{\text{CamR\_total} + \text{CamT\_total}}
\tag{59}
$$

8.57 Rule `PP2B_total`

Rule `PP2B_total` is an assignment rule for parameter `PP2B_total`:

$$
\begin{aligned}
\text{PP2B\_total} = {}& [\text{PP2B}] + [\text{PP2Bi\_Ca1}] + [\text{PP2Bi}] + [\text{PP2Bi\_Ca2}] \\
& + [\text{PP2Bi\_Ca3}] + \text{PP2B\_bound\_total}
\end{aligned}
\tag{60}
$$

8.58 Rule `PP2B_bar`

Rule `PP2B_bar` is an assignment rule for parameter `PP2B_bar`:

$$
\text{PP2B\_bar} = \frac{\text{PP2B\_bound\_total}}{\text{PP2B\_total}}
\tag{61}
$$

8.59 Rule `D_total`

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

$$
\begin{aligned}
\text{D\_total} = {}& [\text{D}] + [\text{PP1a\_Dp}] + [\text{Dp}] + [\text{D\_PKA}] + [\text{Dp\_CamR\_PP2B}] + [\text{Dp\_CamR\_Ca1\_A\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca1\_B\_PP2B}] + [\text{Dp\_CamR\_Ca1\_C\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca1\_D\_PP2B}] + [\text{Dp\_CamR\_Ca2\_AB\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca2\_AC\_PP2B}] + [\text{Dp\_CamR\_Ca2\_AD\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca2\_BC\_PP2B}] + [\text{Dp\_CamR\_Ca2\_BD\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca2\_CD\_PP2B}] + [\text{Dp\_CamR\_Ca3\_ABC\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca3\_ABD\_PP2B}] + [\text{Dp\_CamR\_Ca3\_ACD\_PP2B}] \\
& + [\text{Dp\_CamR\_Ca3\_BCD\_PP2B}] + [\text{Dp\_CamR\_Ca4\_ABCD\_PP2B}]
\end{aligned}
\tag{62}
$$

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

8.60 Rule Dp_total

Rule Dp_total is an assignment rule for parameter Dp_total:

$$
\begin{aligned}
\mathrm{Dp\_total} = & \ [\mathrm{Dp}] + [\mathrm{PP1a\_Dp}] + [\mathrm{Dp\_CamR\_PP2B}] + [\mathrm{Dp\_CamR\_Ca1\_A\_PP2B}] \\
& + [\mathrm{Dp\_CamR\_Ca1\_B\_PP2B}] + [\mathrm{Dp\_CamR\_Ca1\_C\_PP2B}] \\
& + [\mathrm{Dp\_CamR\_Ca1\_D\_PP2B}] + [\mathrm{Dp\_CamR\_Ca2\_AB\_PP2B}] \\
& + [\mathrm{Dp\_CamR\_Ca2\_AC\_PP2B}] + [\mathrm{Dp\_CamR\_Ca2\_AD\_PP2B}] \\
& + [\mathrm{Dp\_CamR\_Ca2\_BC\_PP2B}] + [\mathrm{Dp\_CamR\_Ca2\_BD\_PP2B}] \\
& + [\mathrm{Dp\_CamR\_Ca2\_CD\_PP2B}] + [\mathrm{Dp\_CamR\_Ca3\_ABC\_PP2B}] \\
& + [\mathrm{Dp\_CamR\_Ca3\_ABD\_PP2B}] + [\mathrm{Dp\_CamR\_Ca3\_ACD\_PP2B}] \\
& + [\mathrm{Dp\_CamR\_Ca3\_BCD\_PP2B}] + [\mathrm{Dp\_CamR\_Ca4\_ABCD\_PP2B}]
\end{aligned}
\tag{63}
$$

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

8.61 Rule Dp_bar

Rule Dp_bar is an assignment rule for parameter Dp_bar:

$$
\mathrm{Dp\_bar} = \frac{\mathrm{Dp\_total}}{\mathrm{D\_total}}
\tag{64}
$$

8.62 Rule PP1a_total

Rule PP1a_total is an assignment rule for parameter PP1a_total:

$$
\begin{aligned}
\mathrm{PP1a\_total} = & \ [\mathrm{PP1a}] + [\mathrm{CaMKIIp\_PP1a}] + [\mathrm{CamR\_CaMKIIp\_PP1a}] \\
& + [\mathrm{CamR\_Ca1\_A\_CaMKIIp\_PP1a}] + [\mathrm{CamR\_Ca1\_B\_CaMKIIp\_PP1a}] \\
& + [\mathrm{CamR\_Ca1\_C\_CaMKIIp\_PP1a}] + [\mathrm{CamR\_Ca1\_D\_CaMKIIp\_PP1a}] \\
& + [\mathrm{CamR\_Ca2\_AB\_CaMKIIp\_PP1a}] + [\mathrm{CamR\_Ca2\_AC\_CaMKIIp\_PP1a}] \\
& + [\mathrm{CamR\_Ca2\_AD\_CaMKIIp\_PP1a}] + [\mathrm{CamR\_Ca2\_BC\_CaMKIIp\_PP1a}] \\
& + [\mathrm{CamR\_Ca2\_BD\_CaMKIIp\_PP1a}] + [\mathrm{CamR\_Ca2\_CD\_CaMKIIp\_PP1a}] \\
& + [\mathrm{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a}] + [\mathrm{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a}] \\
& + [\mathrm{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a}] + [\mathrm{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a}] \\
& + [\mathrm{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}]
\end{aligned}
\tag{65}
$$

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

8.63 Rule y_bar

Rule y_bar is an assignment rule for parameter y_bar:

$$
\mathrm{y\_bar} = \frac{\mathrm{moles\_bound\_Ca\_per\_moles\_Cam}}{4}
\tag{66}
$$

8.64 Rule y_bar_div_1_minus_ybar

Rule y_bar_div_1_minus_ybar is an assignment rule for parameter y_bar_div_1_minus_ybar:

$$y\_bar\_div\_1\_minus\_ybar = \frac{y\_bar}{1 - y\_bar} \tag{67}$$

8.65 Rule CamR_Ca1_total

Rule CamR_Ca1_total is an assignment rule for parameter CamR_Ca1_total:

$$\begin{aligned} &CamR\_Ca1\_total \\ &\quad = Free\_CamR\_Ca1\_total + CaMKII\_CamR\_Ca1\_total + Dp\_0\_PP2B\_CamR\_Ca1 \end{aligned} \tag{68}$$

8.66 Rule CamR_Ca1_ratio

Rule CamR_Ca1_ratio is an assignment rule for parameter CamR_Ca1_ratio:

$$CamR\_Ca1\_ratio = \frac{CamR\_Ca1\_total}{Cam\_total} \tag{69}$$

8.67 Rule PP1_total

Rule PP1_total is an assignment rule for parameter PP1_total:

$$\begin{aligned} PP1\_total = &\, [PP1a] + [PP1a\_Dp] + [CaMKIIp\_PP1a] \\ &+ [CamR\_CaMKIIp\_PP1a] + [CamR\_Ca1\_A\_CaMKIIp\_PP1a] \\ &+ [CamR\_Ca1\_B\_CaMKIIp\_PP1a] + [CamR\_Ca1\_C\_CaMKIIp\_PP1a] \\ &+ [CamR\_Ca1\_D\_CaMKIIp\_PP1a] + [CamR\_Ca2\_AB\_CaMKIIp\_PP1a] \\ &+ [CamR\_Ca2\_AC\_CaMKIIp\_PP1a] + [CamR\_Ca2\_AD\_CaMKIIp\_PP1a] \\ &+ [CamR\_Ca2\_BC\_CaMKIIp\_PP1a] + [CamR\_Ca2\_BD\_CaMKIIp\_PP1a] \\ &+ [CamR\_Ca2\_CD\_CaMKIIp\_PP1a] + [CamR\_Ca3\_ABC\_CaMKIIp\_PP1a] \\ &+ [CamR\_Ca3\_ABD\_CaMKIIp\_PP1a] + [CamR\_Ca3\_ACD\_CaMKIIp\_PP1a] \\ &+ [CamR\_Ca3\_BCD\_CaMKIIp\_PP1a] + [CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a] \end{aligned} \tag{70}$$

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

8.68 Rule PP1a_bar

Rule PP1a_bar is an assignment rule for parameter PP1a_bar:

$$PP1a\_bar = \frac{PP1a\_total}{PP1\_total} \tag{71}$$

8.69 Rule K_CamR_T

Rule K_CamR_T is an assignment rule for parameter K_CamR_T:

$$K\_CamR\_T = K\_CamT\_R \cdot parameter\_14 \tag{72}$$

8.70 Rule K_CamR_Ca_C_off

Rule K_CamR_Ca_C_off is an assignment rule for parameter K_CamR_Ca_C_off:

$$K\_CamR\_Ca\_C\_off = parameter\_12 \cdot K\_Cam\_Ca\_on \tag{73}$$

8.71 Rule K_CamT_Ca_C_off

Rule K_CamT_Ca_C_off is an assignment rule for parameter K_CamT_Ca_C_off:

$$K\_CamT\_Ca\_C\_off = \frac{K\_CamR\_Ca\_C\_off}{C\_A\_B\_C\_D} \tag{74}$$

8.72 Rule K_CamR_Ca_D_off

Rule K_CamR_Ca_D_off is an assignment rule for parameter K_CamR_Ca_D_off:

$$K\_CamR\_Ca\_D\_off = parameter\_13 \cdot K\_Cam\_Ca\_on \tag{75}$$

8.73 Rule K_CamT_Ca_D_off

Rule K_CamT_Ca_D_off is an assignment rule for parameter K_CamT_Ca_D_off:

$$K\_CamT\_Ca\_D\_off = \frac{K\_CamR\_Ca\_D\_off}{C\_A\_B\_C\_D} \tag{76}$$

8.74 Rule K_CamR_Ca_A_off

Rule K_CamR_Ca_A_off is an assignment rule for parameter K_CamR_Ca_A_off:

$$K\_CamR\_Ca\_A\_off = parameter\_10 \cdot K\_Cam\_Ca\_on \tag{77}$$

8.75 Rule K_CamT_Ca_A_off

Rule K_CamT_Ca_A_off is an assignment rule for parameter K_CamT_Ca_A_off:

$$K\_CamT\_Ca\_A\_off = \frac{K\_CamR\_Ca\_A\_off}{C\_A\_B\_C\_D} \tag{78}$$

8.76 Rule K_CamR_Ca_B_off

Rule K_CamR_Ca_B_off is an assignment rule for parameter K_CamR_Ca_B_off:

$$K\_CamR\_Ca\_B\_off = parameter\_11 \cdot K\_Cam\_Ca\_on \tag{79}$$

8.77 Rule K_CamT_Ca_B_off

Rule K_CamT_Ca_B_off is an assignment rule for parameter K_CamT_Ca_B_off:

$$K\_CamT\_Ca\_B\_off = \frac{K\_CamR\_Ca\_B\_off}{C\_A\_B\_C\_D} \tag{80}$$

8.78 Rule K_CamR_to_T_Ca2

Rule K_CamR_to_T_Ca2 is an assignment rule for parameter K_CamR_to_T_Ca2:

$$K\_CamR\_to\_T\_Ca2 = C\_A\_B\_C\_D \cdot K\_CamR\_T \tag{81}$$

8.79 Rule K_CamT_to_R_Ca2

Rule K_CamT_to_R_Ca2 is an assignment rule for parameter K_CamT_to_R_Ca2:

$$K\_CamT\_to\_R\_Ca2 = \frac{K\_CamT\_R}{C\_A\_B\_C\_D} \tag{82}$$

8.80 Rule K_CamR_to_T_Ca1

Rule K_CamR_to_T_Ca1 is an assignment rule for parameter K_CamR_to_T_Ca1:

$$K\_CamR\_to\_T\_Ca1 = K\_CamR\_T \cdot C\_A\_B\_C\_D^{\frac{1}{2}} \tag{83}$$

8.81 Rule K_CamT_to_R_Ca1

Rule K_CamT_to_R_Ca1 is an assignment rule for parameter K_CamT_to_R_Ca1:

$$K\_CamT\_to\_R\_Ca1 = \frac{K\_CamT\_R}{C\_A\_B\_C\_D^{\frac{1}{2}}} \tag{84}$$

8.82 Rule K_CamR_to_T_Ca3

Rule K_CamR_to_T_Ca3 is an assignment rule for parameter K_CamR_to_T_Ca3:

$$K\_CamR\_to\_T\_Ca3 = K\_CamR\_T \cdot C\_A\_B\_C\_D^{\frac{3}{2}} \tag{85}$$

8.83 Rule K_CamT_to_R_Ca3

Rule K_CamT_to_R_Ca3 is an assignment rule for parameter K_CamT_to_R_Ca3:

$$K\_CamT\_to\_R\_Ca3 = \frac{K\_CamT\_R}{C\_A\_B\_C\_D^{\frac{3}{2}}} \tag{86}$$

8.84 Rule K_CamR_to_T_Ca4

Rule K_CamR_to_T_Ca4 is an assignment rule for parameter K_CamR_to_T_Ca4:

$$K\_CamR\_to\_T\_Ca4 = K\_CamR\_T \cdot C\_A\_B\_C\_D^{2} \tag{87}$$

8.85 Rule `K_CamT_to_R_Ca4`

Rule `K_CamT_to_R_Ca4` is an assignment rule for parameter `K_CamT_to_R_Ca4`:

$$\text{K\_CamT\_to\_R\_Ca4} = \frac{\text{K\_CamT\_R}}{\text{C\_A\_B\_C\_D}^2} \tag{88}$$

8.86 Rule `PKA_initial`

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

$$\text{PKA\_initial} = \text{Metabolite\_6} \tag{89}$$

8.87 Rule `CaMKII_total`

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

$$
\begin{aligned}
\text{CaMKII\_total} = \ & [\text{CamR\_CaMKII}] + [\text{CamR\_Ca1\_A\_CaMKII}] \\
& + [\text{CamR\_Ca1\_B\_CaMKII}] + [\text{CamR\_Ca1\_C\_CaMKII}] \\
& + [\text{CamR\_Ca1\_D\_CaMKII}] + [\text{CamR\_Ca1\_A\_CaMKIIp}] \\
& + [\text{CamR\_Ca1\_B\_CaMKIIp}] + [\text{CamR\_Ca1\_C\_CaMKIIp}] \\
& + [\text{CamR\_Ca1\_D\_CaMKIIp}] + [\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_B\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_D\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca2\_AB\_CaMKII}] \\
& + [\text{CamR\_Ca2\_AC\_CaMKII}] + [\text{CamR\_Ca2\_AD\_CaMKII}] \\
& + [\text{CamR\_Ca2\_BC\_CaMKII}] + [\text{CamR\_Ca2\_BD\_CaMKII}] \\
& + [\text{CamR\_Ca2\_CD\_CaMKII}] + [\text{CamR\_Ca2\_AB\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_AC\_CaMKIIp}] + [\text{CamR\_Ca2\_AD\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_BC\_CaMKIIp}] + [\text{CamR\_Ca2\_BD\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_CD\_CaMKIIp}] + [\text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca3\_ABC\_CaMKII}] \\
& + [\text{CamR\_Ca3\_ABD\_CaMKII}] + [\text{CamR\_Ca3\_ACD\_CaMKII}] \\
& + [\text{CamR\_Ca3\_BCD\_CaMKII}] + [\text{CamR\_Ca3\_ABC\_CaMKIIp}] \\
& + [\text{CamR\_Ca3\_ABD\_CaMKIIp}] + [\text{CamR\_Ca3\_ACD\_CaMKIIp}] \\
& + [\text{CamR\_Ca3\_BCD\_CaMKIIp}] + [\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca4\_ABCD\_CaMKII}] \\
& + [\text{CamR\_CaMKIIp}] + [\text{CamR\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] + [\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}] \\
& + [\text{CaMKII}] + [\text{CaMKIIp}] + [\text{CaMKIIp\_PP1a}]
\end{aligned}
\tag{90}
$$

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

8.88 Rule `CaMKIIp_bar`

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

$$\text{CaMKIIp\_bar} = \frac{\text{CaMKIIp\_total}}{\text{CaMKII\_total}} \tag{91}$$

8.89 Rule `CaMKII_active_total`

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

$$
\begin{aligned}
\text{CaMKII\_active\_total} = {} & [\text{CamR\_CaMKII}] + [\text{CamR\_Ca1\_A\_CaMKII}] \\
& + [\text{CamR\_Ca1\_B\_CaMKII}] + [\text{CamR\_Ca1\_C\_CaMKII}] \\
& + [\text{CamR\_Ca1\_D\_CaMKII}] + [\text{CamR\_Ca1\_A\_CaMKIIp}] \\
& + [\text{CamR\_Ca1\_B\_CaMKIIp}] + [\text{CamR\_Ca1\_C\_CaMKIIp}] \\
& + [\text{CamR\_Ca1\_D\_CaMKIIp}] + [\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_B\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca1\_D\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca2\_AB\_CaMKII}] \\
& + [\text{CamR\_Ca2\_AC\_CaMKII}] + [\text{CamR\_Ca2\_AD\_CaMKII}] \\
& + [\text{CamR\_Ca2\_BC\_CaMKII}] + [\text{CamR\_Ca2\_BD\_CaMKII}] \\
& + [\text{CamR\_Ca2\_CD\_CaMKII}] + [\text{CamR\_Ca2\_AB\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_AC\_CaMKIIp}] + [\text{CamR\_Ca2\_AD\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_BC\_CaMKIIp}] + [\text{CamR\_Ca2\_BD\_CaMKIIp}] \\
& + [\text{CamR\_Ca2\_CD\_CaMKIIp}] + [\text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca3\_ABC\_CaMKII}] \\
& + [\text{CamR\_Ca3\_ABD\_CaMKII}] + [\text{CamR\_Ca3\_ACD\_CaMKII}] \\
& + [\text{CamR\_Ca3\_BCD\_CaMKII}] + [\text{CamR\_Ca3\_ABC\_CaMKIIp}] \\
& + [\text{CamR\_Ca3\_ABD\_CaMKIIp}] + [\text{CamR\_Ca3\_ACD\_CaMKIIp}] \\
& + [\text{CamR\_Ca3\_BCD\_CaMKIIp}] + [\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a}] \\
& + [\text{CamR\_Ca4\_ABCD\_CaMKII}] + [\text{CamR\_CaMKIIp}] \\
& + [\text{CamR\_CaMKIIp\_PP1a}] + [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \\
& + [\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}] \\
& + [\text{CaMKIIp}] + [\text{CaMKIIp\_PP1a}]
\end{aligned} \tag{92}
$$

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

8.90 Rule `CaMKII_active_ratio`

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

$$\text{CaMKII\_active\_ratio} = \frac{\text{CaMKII\_active\_total}}{\text{CaMKII\_total}} \tag{93}$$

8.91 Rule `K_CaMKII_autoPhosphorylation`

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

$$
\begin{aligned}
\text{K\_CaMKII\_autoPhosphorylation} = \text{MAX} \big(& 0.929 \cdot \text{CaMKII\_active\_ratio}^5 + 3.128 \\
& \cdot \text{CaMKII\_active\_ratio}^4 - 4.249 \cdot \text{CaMKII\_active\_ratio}^3 \\
& + 2.998 \cdot \text{CaMKII\_active\_ratio}^2 + 0.05152 \\
& \cdot \text{CaMKII\_active\_ratio} - 0.001008, 0 \big) \\
& \cdot \text{k\_for\_CaMKII\_autophosphorylation}
\end{aligned}
\tag{94}
$$

8.92 Rule `PP2B_non_i`

Rule `PP2B_non_i` is an assignment rule for parameter `PP2B_non_i`:

$$\text{PP2B\_non\_i} = \text{PP2B\_total} - [\text{PP2Bi\_Ca1}] - [\text{PP2Bi\_Ca2}] - [\text{PP2Bi\_Ca3}] - [\text{PP2Bi}] \tag{95}$$

8.93 Rule `parameter_9`

Rule `parameter_9` is an assignment rule for parameter `parameter_9`:

$$
\text{parameter\_9} =
\begin{cases}
\dfrac{1}{\text{parameter\_5}} & \text{if } \dfrac{1}{\text{parameter\_5}} < 0.0080 \\
0.0080 & \text{otherwise}
\end{cases}
\tag{96}
$$

8.94 Rule `parameter_8`

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

$$
\text{parameter\_8} =
\begin{cases}
0.00717 \cdot 0.0080 \cdot \text{parameter\_5} & \text{if } \dfrac{1}{\text{parameter\_5}} < 0.0080 \\
0.00717 & \text{otherwise}
\end{cases}
\tag{97}
$$

9 Events

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

9.1 Event `event_1`

Name Ca spike on

Trigger condition

$$\text{parameter\_6} = 1 \tag{98}$$

Assignments

$$\text{parameter\_1} = \text{parameter\_8} \tag{99}$$

$$\text{parameter\_7} = \text{time} \tag{100}$$

9.2 Event `event_2`

Name Ca spike off

Trigger condition

$$(\text{parameter\_6} = 1) \wedge (\text{time} = \text{parameter\_7} + \text{parameter\_9}) \tag{101}$$

Assignments

$$\text{parameter\_1} = 0 \tag{102}$$

$$\text{parameter\_6} = 0 \tag{103}$$

$$\text{parameter\_7} = 0 \tag{104}$$

9.3 Event `event_3`

Name Ca_spikes

Trigger condition

$$\begin{aligned}
(\text{time} = \text{ModelValue\_128}) \vee \Bigg(&\left(\text{time} = \text{ModelValue\_128} + \frac{\text{parameter\_3}}{\text{ModelValue\_131}} \right) \\
\wedge &\left(\text{time} < \text{ModelValue\_128} + \frac{\text{ModelValue\_130}}{\text{ModelValue\_131}} \right) \Bigg)
\end{aligned} \tag{105}$$

Assignments

$$\text{parameter\_6} = 1 \tag{106}$$

$$\text{parameter\_3} = \text{parameter\_3} + 1 \tag{107}$$

10 Reactions

This model contains 587 reactions. All reactions are listed in the following table and are subsequently described in detail. If a reaction is affected by a modifier, the identifier of this species is written above the reaction arrow.

Table 5: Overview of all reactions

№	Id	Name	Reaction Equation	SBO
1	Ca_pump	Ca_pump	$Ca \longrightarrow \emptyset$	
2	Ca_leak	Ca_leak	$\emptyset \longrightarrow Ca$	
3	CBPslow_Ca_on	Ca binding to CBPslow	$CBPslow + Ca \longrightarrow CBPslowCa$	
4	CBPslow_Ca_off	Ca dissociating from CBPslow_Ca	$CBPslowCa \longrightarrow CBPslow + Ca$	
5	CBPvslow_Ca_on	Ca binding to CBPvslow	$CBPvslow + Ca \longrightarrow CBPvslowCa$	
6	CBPvslow_Ca_off	Ca dissociating from CBPvslow_Ca	$CBPvslowCa \longrightarrow CBPvslow + Ca$	
7	reaction_0	Ca binding to CamR site A	$CamR + Ca \longrightarrow CamR\_Ca1\_A$	
8	reaction_1	Ca binding to CamR site B	$CamR + Ca \longrightarrow CamR\_Ca1\_B$	
9	reaction_2	Ca binding to CamR site C	$CamR + Ca \longrightarrow CamR\_Ca1\_C$	
10	reaction_3	Ca binding to CamR site D	$CamR + Ca \longrightarrow CamR\_Ca1\_D$	
11	reaction_4	Ca dissociating from CamR_Ca1_A site A	$CamR\_Ca1\_A \longrightarrow CamR + Ca$	
12	reaction_5	Ca dissociating from CamR_Ca1_B site B	$CamR\_Ca1\_B \longrightarrow CamR + Ca$	
13	reaction_6	Ca dissociating from CamR_Ca1_C site C	$CamR\_Ca1\_C \longrightarrow CamR + Ca$	
14	reaction_7	Ca dissociating from CamR_Ca1_D site D	$CamR\_Ca1\_D \longrightarrow CamR + Ca$	
15	reaction_8	Ca binding to CamR_Ca1_A site B	$CamR\_Ca1\_A + Ca \longrightarrow CamR\_Ca2\_AB$	
16	reaction_9	Ca binding to CamR_Ca1_A site C	$CamR\_Ca1\_A + Ca \longrightarrow CamR\_Ca2\_AC$	
17	reaction_10	Ca binding to CamR_Ca1_A site D	$CamR\_Ca1\_A + Ca \longrightarrow CamR\_Ca2\_AD$	
18	reaction_11	Ca binding to CamR_Ca1_B site A	$CamR\_Ca1\_B + Ca \longrightarrow CamR\_Ca2\_AB$	
19	reaction_12	Ca binding to CamR_Ca1_B site C	$CamR\_Ca1\_B + Ca \longrightarrow CamR\_Ca2\_BC$	
20	reaction_13	Ca binding to CamR_Ca1_B site D	$CamR\_Ca1\_B + Ca \longrightarrow CamR\_Ca2\_BD$	
21	reaction_14	Ca binding to CamR_Ca1_C site A	$CamR\_Ca1\_C + Ca \longrightarrow CamR\_Ca2\_AC$	
22	reaction_15	Ca binding to CamR_Ca1_C site B	$CamR\_Ca1\_C + Ca \longrightarrow CamR\_Ca2\_BC$	
23	reaction_16	Ca binding to CamR_Ca1_C site D	$CamR\_Ca1\_C + Ca \longrightarrow CamR\_Ca2\_CD$	

№	Id	Name	Reaction Equation	SBO
24	reaction_17	Ca binding to CamR_Ca1_D site A	CamR_Ca1_D + Ca ⟶ CamR_Ca2_AD	
25	reaction_18	Ca binding to CamR_Ca1_D site B	CamR_Ca1_D + Ca ⟶ CamR_Ca2_BD	
26	reaction_19	Ca binding to CamR_Ca1_D site C	CamR_Ca1_D + Ca ⟶ CamR_Ca2_CD	
27	reaction_20	Ca dissociating from CamR_Ca2_AB site B	CamR_Ca2_AB ⟶ CamR_Ca1_A + Ca	
28	reaction_21	Ca dissociating from CamR_Ca2_AC site C	CamR_Ca2_AC ⟶ CamR_Ca1_A + Ca	
29	reaction_22	Ca dissociating from CamR_Ca2_AD site D	CamR_Ca2_AD ⟶ CamR_Ca1_A + Ca	
30	reaction_23	Ca dissociating from CamR_Ca2_AB site A	CamR_Ca2_AB ⟶ CamR_Ca1_B + Ca	
31	reaction_24	Ca dissociating from CamR_Ca2_BC site C	CamR_Ca2_BC ⟶ CamR_Ca1_B + Ca	
32	reaction_25	Ca dissociating from CamR_Ca2_BD site D	CamR_Ca2_BD ⟶ CamR_Ca1_B + Ca	
33	reaction_26	Ca dissociating from CamR_Ca2_AC site A	CamR_Ca2_AC ⟶ CamR_Ca1_C + Ca	
34	reaction_27	Ca dissociating from CamR_Ca2_BC site B	CamR_Ca2_BC ⟶ CamR_Ca1_C + Ca	
35	reaction_28	Ca dissociating from CamR_Ca2_CD site D	CamR_Ca2_CD ⟶ CamR_Ca1_C + Ca	
36	reaction_29	Ca dissociating from CamR_Ca2_AD site A	CamR_Ca2_AD ⟶ CamR_Ca1_D + Ca	
37	reaction_30	Ca dissociating from CamR_Ca2_BD site B	CamR_Ca2_BD ⟶ CamR_Ca1_D + Ca	
38	reaction_31	Ca dissociating from CamR_Ca2_CD site C	CamR_Ca2_CD ⟶ CamR_Ca1_D + Ca	
39	reaction_32	Ca binding to CamR_Ca2_AB site C	CamR_Ca2_AB + Ca ⟶ CamR_Ca3_ABC	
40	reaction_33	Ca binding to CamR_Ca2_AB site D	CamR_Ca2_AB + Ca ⟶ CamR_Ca3_ABD	
41	reaction_34	Ca binding to CamR_Ca2_AC site B	CamR_Ca2_AC + Ca ⟶ CamR_Ca3_ABC	
42	reaction_35	Ca binding to CamR_Ca2_AC site D	CamR_Ca2_AC + Ca ⟶ CamR_Ca3_ACD	
43	reaction_36	Ca binding to CamR_Ca2_AD site B	CamR_Ca2_AD + Ca ⟶ CamR_Ca3_ABD	
44	reaction_37	Ca binding to CamR_Ca2_AD site C	CamR_Ca2_AD + Ca ⟶ CamR_Ca3_ACD	
45	reaction_38	Ca binding to CamR_Ca2_BC site A	CamR_Ca2_BC + Ca ⟶ CamR_Ca3_ABC	
46	reaction_39	Ca binding to CamR_Ca2_BC site D	CamR_Ca2_BC + Ca ⟶ CamR_Ca3_BCD	
47	reaction_40	Ca binding to CamR_Ca2_BD site A	CamR_Ca2_BD + Ca ⟶ CamR_Ca3_ABD	
48	reaction_41	Ca binding to CamR_Ca2_BD site C	CamR_Ca2_BD + Ca ⟶ CamR_Ca3_BCD	
49	reaction_42	Ca binding to CamR_Ca2_CD site A	CamR_Ca2_CD + Ca ⟶ CamR_Ca3_ACD	
50	reaction_43	Ca binding to CamR_Ca2_CD site B	CamR_Ca2_CD + Ca ⟶ CamR_Ca3_BCD	
51	reaction_44	Ca dissociating from CamR_Ca3_ABC site A	CamR_Ca3_ABC ⟶ CamR_Ca2_BC + Ca	
52	reaction_45	Ca dissociating from CamR_Ca3_ABC site B	CamR_Ca3_ABC ⟶ CamR_Ca2_AC + Ca	

№	Id	Name	Reaction Equation	SBO
53	reaction_46	Ca dissociating from CamR_Ca3_ABC site C	CamR_Ca3_ABC ⟶ CamR_Ca2_AB + Ca	
54	reaction_47	Ca dissociating from CamR_Ca3_ABD site A	CamR_Ca3_ABD ⟶ CamR_Ca2_BD + Ca	
55	reaction_48	Ca dissociating from CamR_Ca3_ABD site B	CamR_Ca3_ABD ⟶ CamR_Ca2_AD + Ca	
56	reaction_49	Ca dissociating from CamR_Ca3_ABD site D	CamR_Ca3_ABD ⟶ CamR_Ca2_AB + Ca	
57	reaction_50	Ca dissociating from CamR_Ca3_ACD site A	CamR_Ca3_ACD ⟶ CamR_Ca2_CD + Ca	
58	reaction_51	Ca dissociating from CamR_Ca3_ACD site C	CamR_Ca3_ACD ⟶ CamR_Ca2_AD + Ca	
59	reaction_52	Ca dissociating from CamR_Ca3_ACD site D	CamR_Ca3_ACD ⟶ CamR_Ca2_AC + Ca	
60	reaction_53	Ca dissociating from CamR_Ca3_BCD site B	CamR_Ca3_BCD ⟶ CamR_Ca2_CD + Ca	
61	reaction_54	Ca dissociating from CamR_Ca3_BCD site C	CamR_Ca3_BCD ⟶ CamR_Ca2_BD + Ca	
62	reaction_55	Ca dissociating from CamR_Ca3_BCD site D	CamR_Ca3_BCD ⟶ CamR_Ca2_BC + Ca	
63	reaction_56	Ca binding to CamR_Ca3_ABC site D	CamR_Ca3_ABC + Ca ⟶ CamR_Ca4_ABCD	
64	reaction_57	Ca binding to CamR_Ca3_ABD site C	CamR_Ca3_ABD + Ca ⟶ CamR_Ca4_ABCD	
65	reaction_58	Ca binding to CamR_Ca3_ACD site B	CamR_Ca3_ACD + Ca ⟶ CamR_Ca4_ABCD	
66	reaction_59	Ca binding to CamR_Ca3_BCD site A	CamR_Ca3_BCD + Ca ⟶ CamR_Ca4_ABCD	
67	reaction_60	Ca dissociating from CamR_Ca4_ABCD site D	CamR_Ca4_ABCD ⟶ CamR_Ca3_ABC + Ca	
68	reaction_61	Ca dissociating from CamR_Ca4_ABCD site C	CamR_Ca4_ABCD ⟶ CamR_Ca3_ABD + Ca	
69	reaction_62	Ca dissociating from CamR_Ca4_ABCD site B	CamR_Ca4_ABCD ⟶ CamR_Ca3_ACD + Ca	
70	reaction_63	Ca dissociating from CamR_Ca4_ABCD site A	CamR_Ca4_ABCD ⟶ CamR_Ca3_BCD + Ca	
71	reaction_64	Ca binding to camT site A	CamT + Ca ⟶ CamT_Ca1_A	
72	reaction_65	Ca binding to camT site B	CamT + Ca ⟶ CamT_Ca1_B	
73	reaction_66	Ca binding to camT site C	CamT + Ca ⟶ CamT_Ca1_C	
74	reaction_67	Ca binding to camT site D	CamT + Ca ⟶ CamT_Ca1_D	
75	reaction_68	Ca dissociating from camT_ca1_A site A	CamT_Ca1_A ⟶ CamT + Ca	
76	reaction_69	Ca dissociating from camT_ca1_B site B	CamT_Ca1_B ⟶ CamT + Ca	
77	reaction_70	Ca dissociating from camT_ca1_C site C	CamT_Ca1_C ⟶ CamT + Ca	

№	Id	Name	Reaction Equation	SBO
78	reaction_71	Ca dissociating from camT_ca1_D site D	$CamT\_Ca1\_D \longrightarrow CamT + Ca$	
79	reaction_72	Ca binding to camT_ca1_A site B	$CamT\_Ca1\_A + Ca \longrightarrow CamT\_Ca2\_AB$	
80	reaction_73	Ca binding to camT_ca1_A site C	$CamT\_Ca1\_A + Ca \longrightarrow CamT\_Ca2\_AC$	
81	reaction_74	Ca binding to camT_ca1_A site D	$CamT\_Ca1\_A + Ca \longrightarrow CamT\_Ca2\_AD$	
82	reaction_75	Ca binding to camT_ca1_B site A	$CamT\_Ca1\_B + Ca \longrightarrow CamT\_Ca2\_AB$	
83	reaction_76	Ca binding to camT_ca1_B site C	$CamT\_Ca1\_B + Ca \longrightarrow CamT\_Ca2\_BC$	
84	reaction_77	Ca binding to camT_ca1_B site D	$CamT\_Ca1\_B + Ca \longrightarrow CamT\_Ca2\_BD$	
85	reaction_78	Ca binding to camT_ca1_C site A	$CamT\_Ca1\_C + Ca \longrightarrow CamT\_Ca2\_AC$	
86	reaction_79	Ca binding to camT_ca1_C site B	$CamT\_Ca1\_C + Ca \longrightarrow CamT\_Ca2\_BC$	
87	reaction_80	Ca binding to CamT_ca1_C site D	$CamT\_Ca1\_C + Ca \longrightarrow CamT\_Ca2\_CD$	
88	reaction_81	Ca binding to CamT_ca1_D site A	$CamT\_Ca1\_D + Ca \longrightarrow CamT\_Ca2\_AD$	
89	reaction_82	Ca binding to CamT_ca1_D site B	$CamT\_Ca1\_D + Ca \longrightarrow CamT\_Ca2\_BD$	
90	reaction_83	Ca binding to CamT_ca1_D site C	$CamT\_Ca1\_D + Ca \longrightarrow CamT\_Ca2\_CD$	
91	reaction_84	Ca dissociating from CamT_ca2_AB site A	$CamT\_Ca2\_AB \longrightarrow CamT\_Ca1\_B + Ca$	
92	reaction_85	Ca dissociating from CamT_ca2_AB site B	$CamT\_Ca2\_AB \longrightarrow CamT\_Ca1\_A + Ca$	
93	reaction_86	Ca dissociating from CamT_ca2_AC site A	$CamT\_Ca2\_AC \longrightarrow CamT\_Ca1\_C + Ca$	
94	reaction_87	Ca dissociating from CamT_ca2_AC site C	$CamT\_Ca2\_AC \longrightarrow CamT\_Ca1\_A + Ca$	
95	reaction_88	Ca dissociating from CamT_ca2_AD site A	$CamT\_Ca2\_AD \longrightarrow CamT\_Ca1\_D + Ca$	
96	reaction_89	Ca dissociating from CamT_ca2_AD site D	$CamT\_Ca2\_AD \longrightarrow CamT\_Ca1\_A + Ca$	
97	reaction_90	Ca dissociating from CamT_ca2_BC site B	$CamT\_Ca2\_BC \longrightarrow CamT\_Ca1\_C + Ca$	
98	reaction_91	Ca dissociating from CamT_ca2_BC site C	$CamT\_Ca2\_BC \longrightarrow CamT\_Ca1\_B + Ca$	
99	reaction_92	Ca dissociating from CamT_ca2_BD site B	$CamT\_Ca2\_BD \longrightarrow CamT\_Ca1\_D + Ca$	
100	reaction_93	Ca dissociating from CamT_ca2_BD site D	$CamT\_Ca2\_BD \longrightarrow CamT\_Ca1\_B + Ca$	
101	reaction_94	Ca dissociating from CamT_ca2_CD site C	$CamT\_Ca2\_CD \longrightarrow CamT\_Ca1\_D + Ca$	
102	reaction_95	Ca dissociating from CamT_ca2_CD site D	$CamT\_Ca2\_CD \longrightarrow CamT\_Ca1\_C + Ca$	
103	reaction_96	Ca binding to CamT_ca2_AB site C	$CamT\_Ca2\_AB + Ca \longrightarrow CamT\_Ca3\_ABC$	
104	reaction_97	Ca binding to CamT_ca2_AB site D	$CamT\_Ca2\_AB + Ca \longrightarrow CamT\_Ca3\_ABD$	
105	reaction_98	Ca binding to CamT_ca2_AC site B	$CamT\_Ca2\_AC + Ca \longrightarrow CamT\_Ca3\_ABC$	
106	reaction_99	Ca binding to CamT_ca2_AC site D	$CamT\_Ca2\_AC + Ca \longrightarrow CamT\_Ca3\_ACD$	

№	Id	Name	Reaction Equation	SBO
107	reaction_100	Ca binding to CamT_Ca2_AD site B	CamT_Ca2_AD + Ca $\longrightarrow$ CamT_Ca3_ABD	
108	reaction_101	Ca binding to CamT_Ca2_AD site C	CamT_Ca2_AD + Ca $\longrightarrow$ CamT_Ca3_ACD	
109	reaction_102	Ca binding to CamT_Ca2_BC site A	CamT_Ca2_BC + Ca $\longrightarrow$ CamT_Ca3_ABC	
110	reaction_103	Ca binding to CamT_Ca2_BC site D	CamT_Ca2_BC + Ca $\longrightarrow$ CamT_Ca3_BCD	
111	reaction_104	Ca binding to CamT_Ca2_BD site A	CamT_Ca2_BD + Ca $\longrightarrow$ CamT_Ca3_ABD	
112	reaction_105	Ca binding to CamT_Ca2_BD site C	CamT_Ca2_BD + Ca $\longrightarrow$ CamT_Ca3_BCD	
113	reaction_106	Ca binding to CamT_Ca2_CD site A	CamT_Ca2_CD + Ca $\longrightarrow$ CamT_Ca3_ACD	
114	reaction_107	Ca binding to CamT_Ca2_CD site B	CamT_Ca2_CD + Ca $\longrightarrow$ CamT_Ca3_BCD	
115	reaction_108	Ca dissociating from CamT_Ca3_ABC site B	CamT_Ca3_ABC $\longrightarrow$ CamT_Ca2_AC + Ca	
116	reaction_109	Ca dissociating from CamT_Ca3_ABC site A	CamT_Ca3_ABC $\longrightarrow$ CamT_Ca2_BC + Ca	
117	reaction_110	Ca dissociating from CamT_Ca3_ABD site D	CamT_Ca3_ABD $\longrightarrow$ CamT_Ca2_AB + Ca	
118	reaction_111	Ca dissociating from CamT_Ca3_ABD site B	CamT_Ca3_ABD $\longrightarrow$ CamT_Ca2_AD + Ca	
119	reaction_112	Ca dissociating from CamT_Ca3_ABD site A	CamT_Ca3_ABD $\longrightarrow$ CamT_Ca2_BD + Ca	
120	reaction_113	Ca dissociating from CamT_Ca3_ACD site D	CamT_Ca3_ACD $\longrightarrow$ CamT_Ca2_AC + Ca	
121	reaction_114	Ca dissociating from CamT_Ca3_ACD site C	CamT_Ca3_ACD $\longrightarrow$ CamT_Ca2_AD + Ca	
122	reaction_115	Ca dissociating from CamT_Ca3_ACD site A	CamT_Ca3_ACD $\longrightarrow$ CamT_Ca2_CD + Ca	
123	reaction_116	Ca dissociating from CamT_Ca3_BCD site D	CamT_Ca3_BCD $\longrightarrow$ CamT_Ca2_BC + Ca	
124	reaction_117	Ca dissociating from CamT_Ca3_BCD site C	CamT_Ca3_BCD $\longrightarrow$ CamT_Ca2_BD + Ca	
125	reaction_118	Ca dissociating from CamT_Ca3_BCD site B	CamT_Ca3_BCD $\longrightarrow$ CamT_Ca2_CD + Ca	
126	reaction_119	Ca binding to CamT_Ca3_ABC site D	CamT_Ca3_ABC + Ca $\longrightarrow$ CamT_Ca4_ABCD	
127	reaction_120	Ca binding to CamT_Ca3_ABD site C	CamT_Ca3_ABD + Ca $\longrightarrow$ CamT_Ca4_ABCD	
128	reaction_121	Ca binding to CamT_Ca3_ACD site B	CamT_Ca3_ACD + Ca $\longrightarrow$ CamT_Ca4_ABCD	
129	reaction_122	Ca binding to CamT_Ca3_BCD site A	CamT_Ca3_BCD + Ca $\longrightarrow$ CamT_Ca4_ABCD	
130	reaction_123	Ca dissociating from CamT_Ca4_ABCD site D	CamT_Ca4_ABCD $\longrightarrow$ CamT_Ca3_ABC + Ca	
131	reaction_124	Ca dissociating from CamT_Ca4_ABCD site C	CamT_Ca4_ABCD $\longrightarrow$ CamT_Ca3_ABD + Ca	
132	reaction_125	Ca dissociating from CamT_Ca4_ABCD site B	CamT_Ca4_ABCD $\longrightarrow$ CamT_Ca3_ACD + Ca	

№	Id	Name	Reaction Equation	SBO
133	reaction_126	Ca dissociating from CamT_Ca4_ABCD site A	CamT_Ca4_ABCD $\longrightarrow$ CamT_Ca3_BCD $+$ Ca	
134	reaction_127	Transition CamR to CamT	CamR $\longrightarrow$ CamT	
135	reaction_128	Transition CamT to CamR	CamT $\longrightarrow$ CamR	
136	reaction_129	Transition CamR_Ca1_A to CamT_Ca1_A	CamR_Ca1_A $\longrightarrow$ CamT_Ca1_A	
137	reaction_130	Transition CamR_Ca1_B to CamT_Ca1_B	CamR_Ca1_B $\longrightarrow$ CamT_Ca1_B	
138	reaction_131	Transition CamR_Ca1_C to CamT_Ca1_C	CamR_Ca1_C $\longrightarrow$ CamT_Ca1_C	
139	reaction_132	Transition CamR_Ca1_D to CamT_Ca1_D	CamR_Ca1_D $\longrightarrow$ CamT_Ca1_D	
140	reaction_133	Transition CamT_Ca1_A to CamR_Ca1_A	CamT_Ca1_A $\longrightarrow$ CamR_Ca1_A	
141	reaction_134	Transition CamT_Ca1_B to CamR_Ca1_B	CamT_Ca1_B $\longrightarrow$ CamR_Ca1_B	
142	reaction_135	Transition CamT_Ca1_C to CamR_Ca1_C	CamT_Ca1_C $\longrightarrow$ CamR_Ca1_C	
143	reaction_136	Transition CamT_Ca1_D to CamR_Ca1_D	CamT_Ca1_D $\longrightarrow$ CamR_Ca1_D	
144	reaction_137	Transition CamR_Ca2_AB to CamT_Ca2_AB	CamR_Ca2_AB $\longrightarrow$ CamT_Ca2_AB	
145	reaction_138	Transition CamR_Ca2_AC to CamT_Ca2_AC	CamR_Ca2_AC $\longrightarrow$ CamT_Ca2_AC	
146	reaction_139	Transition CamR_Ca2_AD to CamT_Ca2_AD	CamR_Ca2_AD $\longrightarrow$ CamT_Ca2_AD	
147	reaction_140	Transition CamR_Ca2_BC to CamT_Ca2_BC	CamR_Ca2_BC $\longrightarrow$ CamT_Ca2_BC	
148	reaction_141	Transition CamR_Ca2_BD to CamT_Ca2_BD	CamR_Ca2_BD $\longrightarrow$ CamT_Ca2_BD	
149	reaction_142	Transition CamR_Ca2_CD to CamT_Ca2_CD	CamR_Ca2_CD $\longrightarrow$ CamT_Ca2_CD	
150	reaction_143	Transition CamT_Ca2_AB to CamR_Ca2_AB	CamT_Ca2_AB $\longrightarrow$ CamR_Ca2_AB	
151	reaction_144	Transition CamT_Ca2_AC to CamR_Ca2_AC	CamT_Ca2_AC $\longrightarrow$ CamR_Ca2_AC	
152	reaction_145	Transition CamT_Ca2_AD to CamR_Ca2_AD	CamT_Ca2_AD $\longrightarrow$ CamR_Ca2_AD	
153	reaction_146	Transition CamT_Ca2_BC to CamR_Ca2_BC	CamT_Ca2_BC $\longrightarrow$ CamR_Ca2_BC	
154	reaction_147	Transition CamT_Ca2_BD to CamR_Ca2_BD	CamT_Ca2_BD $\longrightarrow$ CamR_Ca2_BD	
155	reaction_148	Transition CamT_Ca2_CD to CamR_Ca2_CD	CamT_Ca2_CD $\longrightarrow$ CamR_Ca2_CD	
156	reaction_149	Transition CamR_Ca3_ABC to CamT_Ca3-_ABC	CamR_Ca3_ABC $\longrightarrow$ CamT_Ca3_ABC	
157	reaction_150	Transition CamR_Ca3_ABD to CamT_Ca3-_ABD	CamR_Ca3_ABD $\longrightarrow$ CamT_Ca3_ABD	

№	Id	Name	Reaction Equation	SBO
158	reaction_151	Transition CamR_Ca3_ACD to CamT_Ca3-_ACD	CamR_Ca3_ACD ⟶ CamT_Ca3_ACD	
159	reaction_152	Transition CamR_Ca3_BCD to CamT_Ca3-_BCD	CamR_Ca3_BCD ⟶ CamT_Ca3_BCD	
160	reaction_153	Transition CamT_Ca3_ABC to CamR_Ca3-_ABC	CamT_Ca3_ABC ⟶ CamR_Ca3_ABC	
161	reaction_154	Transition CamT_Ca3_ABD to CamR_Ca3-_ABD	CamT_Ca3_ABD ⟶ CamR_Ca3_ABD	
162	reaction_155	Transition CamT_Ca3_ACD to CamR_Ca3-_ACD	CamT_Ca3_ACD ⟶ CamR_Ca3_ACD	
163	reaction_156	Transition CamT_Ca3_BCD to CamR_Ca3-_BCD	CamT_Ca3_BCD ⟶ CamR_Ca3_BCD	
164	reaction_157	Transition CamR_Ca4_ABCD to CamT_Ca4-_ABCD	CamR_Ca4_ABCD ⟶ CamT_Ca4_ABCD	
165	reaction_158	Transition CamT_Ca4_ABCD to CamR_Ca4-_ABCD	CamT_Ca4_ABCD ⟶ CamR_Ca4_ABCD	
166	reaction_159	CamKII binding to CamR	CamR + CaMKII ⟶ CamR_CaMKII	
167	reaction_160	CamKII binding to CamR_Ca1_A	CamR_Ca1_A + CaMKII ⟶ CamR_Ca1_A_CaMKII	
168	reaction_161	CamKII binding to CamR_Ca1_B	CamR_Ca1_B + CaMKII ⟶ CamR_Ca1_B_CaMKII	
169	reaction_162	CamKII binding to CamR_Ca1_C	CamR_Ca1_C + CaMKII ⟶ CamR_Ca1_C_CaMKII	
170	reaction_163	CamKII binding to CamR_Ca1_D	CamR_Ca1_D + CaMKII ⟶ CamR_Ca1_D_CaMKII	
171	reaction_164	CamKII binding to CamR_Ca2_AB	CamR_Ca2_AB + CaMKII ⟶ CamR_Ca2_AB_CaMKII	
172	reaction_165	CamKII binding to CamR_Ca2_AC	CamR_Ca2_AC + CaMKII ⟶ CamR_Ca2_AC_CaMKII	
173	reaction_166	CamKII binding to CamR_Ca2_AD	CamR_Ca2_AD + CaMKII ⟶ CamR_Ca2_AD_CaMKII	
174	reaction_167	CamKII binding to CamR_Ca2_BC	CamR_Ca2_BC + CaMKII ⟶ CamR_Ca2_BC_CaMKII	
175	reaction_168	CamKII binding to CamR_Ca2_BD	CamR_Ca2_BD + CaMKII ⟶ CamR_Ca2_BD_CaMKII	
176	reaction_169	CamKII binding to CamR_Ca2_CD	CamR_Ca2_CD + CaMKII ⟶ CamR_Ca2_CD_CaMKII	
177	reaction_170	CamKII binding to CamR_Ca3_ABC	CamR_Ca3_ABC + CaMKII ⟶ CamR_Ca3_ABC_CaMKII	

№	Id	Name	Reaction Equation	SBO
178	reaction_171	CamKII binding to CamR_Ca3_ABD	CamR_Ca3_ABD + CaMKII $\longrightarrow$ CamR_Ca3_ABD_CaMKII	+
179	reaction_172	CamKII binding to CamR_Ca3_ACD	CamR_Ca3_ACD + CaMKII $\longrightarrow$ CamR_Ca3_ACD_CaMKII	+
180	reaction_173	CamKII binding to CamR_Ca3_BCD	CamR_Ca3_BCD + CaMKII $\longrightarrow$ CamR_Ca3_BCD_CaMKII	+
181	reaction_174	CamKII binding to CamR_Ca4_ABCD	CamR_Ca4_ABCD + CaMKII $\longrightarrow$ CamR_Ca4_ABCD_CaMKII	+
182	reaction_175	CamKII dissociating from CamR	CamR_CaMKII $\longrightarrow$ CamR + CaMKII	
183	reaction_176	CamKII dissociating from CamR_Ca1_A	CamR_Ca1_A_CaMKII $\longrightarrow$ CamR_Ca1_A + CaMKII	+
184	reaction_177	CamKII dissociating from CamR_Ca1_B	CamR_Ca1_B_CaMKII $\longrightarrow$ CamR_Ca1_B + CaMKII	+
185	reaction_178	CamKII dissociating from CamR_Ca1_C	CamR_Ca1_C_CaMKII $\longrightarrow$ CamR_Ca1_C + CaMKII	+
186	reaction_179	CamKII dissociating from CamR_Ca1_D	CamR_Ca1_D_CaMKII $\longrightarrow$ CamR_Ca1_D + CaMKII	+
187	reaction_180	CamKII dissociating from CamR_Ca2_AB	CamR_Ca2_AB_CaMKII $\longrightarrow$ CamR_Ca2_AB + CaMKII	+
188	reaction_181	CamKII dissociating from CamR_Ca2_AC	CamR_Ca2_AC_CaMKII $\longrightarrow$ CamR_Ca2_AC + CaMKII	+
189	reaction_182	CamKII dissociating from CamR_Ca2_AD	CamR_Ca2_AD_CaMKII $\longrightarrow$ CamR_Ca2_AD + CaMKII	+
190	reaction_183	CamKII dissociating from CamR_Ca2_BC	CamR_Ca2_BC_CaMKII $\longrightarrow$ CamR_Ca2_BC + CaMKII	+
191	reaction_184	CamKII dissociating from CamR_Ca2_BD	CamR_Ca2_BD_CaMKII $\longrightarrow$ CamR_Ca2_BD + CaMKII	+
192	reaction_185	CamKII dissociating from CamR_Ca2_CD	CamR_Ca2_CD_CaMKII $\longrightarrow$ CamR_Ca2_CD + CaMKII	+

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193	reaction_186	CamKII dissociating from CamR_Ca3_ABC	CamR_Ca3_ABC_CaMKII ⟶ CamR_Ca3_ABC + CaMKII	
194	reaction_187	CamKII dissociating from CamR_Ca3_ABD	CamR_Ca3_ABD_CaMKII ⟶ CamR_Ca3_ABD + CaMKII	
195	reaction_188	CamKII dissociating from CamR_Ca3_ACD	CamR_Ca3_ACD_CaMKII ⟶ CamR_Ca3_ACD + CaMKII	
196	reaction_189	CamKII dissociating from CamR_Ca3_BCD	CamR_Ca3_BCD_CaMKII ⟶ CamR_Ca3_BCD + CaMKII	
197	reaction_190	CamKII dissociating from CamR_Ca4-_ABCD	CamR_Ca4_ABCD_CaMKII ⟶ CamR_Ca4_ABCD+ CaMKII	
198	reaction_191	PP2B binding to CamR	CamR + PP2B ⟶ CamR_PP2B	
199	reaction_192	PP2B binding to CamR_Ca1_A	CamR_Ca1_A + PP2B ⟶ CamR_Ca1_A_PP2B	
200	reaction_193	PP2B binding to CamR_Ca1_B	CamR_Ca1_B + PP2B ⟶ CamR_Ca1_B_PP2B	
201	reaction_194	PP2B binding to CamR_Ca1_C	CamR_Ca1_C + PP2B ⟶ CamR_Ca1_C_PP2B	
202	reaction_195	PP2B binding to CamR_Ca1_D	CamR_Ca1_D + PP2B ⟶ CamR_Ca1_D_PP2B	
203	reaction_196	PP2B binding to CamR_Ca2_AB	CamR_Ca2_AB + PP2B ⟶ CamR_Ca2_AB_PP2B	
204	reaction_198	PP2B binding to CamR_Ca2_AD	CamR_Ca2_AD + PP2B ⟶ CamR_Ca2_AD_PP2B	
205	reaction_199	PP2B binding to CamR_Ca2_BC	CamR_Ca2_BC + PP2B ⟶ CamR_Ca2_BC_PP2B	
206	reaction_200	PP2B binding to CamR_Ca2_BD	CamR_Ca2_BD + PP2B ⟶ CamR_Ca2_BD_PP2B	
207	reaction_201	PP2B binding to CamR_Ca2_CD	CamR_Ca2_CD + PP2B ⟶ CamR_Ca2_CD_PP2B	
208	reaction_202	PP2B binding to CamR_Ca3_ABC	CamR_Ca3_ABC + PP2B ⟶ CamR_Ca3_ABC_PP2B	
209	reaction_203	PP2B binding to CamR_Ca3_ABD	CamR_Ca3_ABD + PP2B ⟶ CamR_Ca3_ABD_PP2B	
210	reaction_204	PP2B binding to CamR_Ca3_ACD	CamR_Ca3_ACD + PP2B ⟶ CamR_Ca3_ACD_PP2B	
211	reaction_205	PP2B binding to CamR_Ca3_BCD	CamR_Ca3_BCD + PP2B ⟶ CamR_Ca3_BCD_PP2B	

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212	reaction_206	PP2B binding to CamR_Ca4_ABCD	CamR_Ca4_ABCD $+$ PP2B $\longrightarrow$ CamR_Ca4_ABCD_PP2B	
213	reaction_207	PP2B dissociating from CamR	CamR_PP2B $\longrightarrow$ CamR $+$ PP2B	
214	reaction_208	PP2B dissociating from CamR_Ca1_A	CamR_Ca1_A_PP2B $\longrightarrow$ CamR_Ca1_A $+$ PP2B	
215	reaction_209	PP2B dissociating from CamR_Ca1_B	CamR_Ca1_B_PP2B $\longrightarrow$ CamR_Ca1_B $+$ PP2B	
216	reaction_210	PP2B dissociating from CamR_Ca1_C	CamR_Ca1_C_PP2B $\longrightarrow$ CamR_Ca1_C $+$ PP2B	
217	reaction_211	PP2B dissociating from CamR_Ca1_D	CamR_Ca1_D_PP2B $\longrightarrow$ CamR_Ca1_D $+$ PP2B	
218	reaction_212	PP2B dissociating from CamR_Ca2_AB	CamR_Ca2_AB_PP2B $\longrightarrow$ CamR_Ca2_AB $+$ PP2B	
219	reaction_213	PP2B dissociating from CamR_Ca2_AC	CamR_Ca2_AC_PP2B $\longrightarrow$ CamR_Ca2_AC $+$ PP2B	
220	reaction_214	PP2B dissociating from CamR_Ca2_AD	CamR_Ca2_AD_PP2B $\longrightarrow$ CamR_Ca2_AD $+$ PP2B	
221	reaction_215	PP2B dissociating from CamR_Ca2_BC	CamR_Ca2_BC_PP2B $\longrightarrow$ CamR_Ca2_BC $+$ PP2B	
222	reaction_216	PP2B dissociating from CamR_Ca2_BD	CamR_Ca2_BD_PP2B $\longrightarrow$ CamR_Ca2_BD $+$ PP2B	
223	reaction_217	PP2B dissociating from CamR_Ca2_CD	CamR_Ca2_CD_PP2B $\longrightarrow$ CamR_Ca2_CD $+$ PP2B	
224	reaction_218	PP2B dissociating from CamR_Ca3_ABC	CamR_Ca3_ABC_PP2B $\longrightarrow$ CamR_Ca3_ABC $+$ PP2B	
225	reaction_219	PP2B dissociating from CamR_Ca3_ABD	CamR_Ca3_ABD_PP2B $\longrightarrow$ CamR_Ca3_ABD $+$ PP2B	
226	reaction_220	PP2B dissociating from CamR_Ca3_ACD	CamR_Ca3_ACD_PP2B $\longrightarrow$ CamR_Ca3_ACD $+$ PP2B	
227	reaction_221	PP2B dissociating from CamR_Ca3_BCD	CamR_Ca3_BCD_PP2B $\longrightarrow$ CamR_Ca3_BCD $+$ PP2B	
228	reaction_222	PP2B dissociating from CamR_Ca4_ABCD	CamR_Ca4_ABCD_PP2B $\longrightarrow$ CamR_Ca4_ABCD $+$ PP2B	
229	reaction_223	Ca binding to CamR_CamKII site A	CamR_CamKII $+$ Ca $\longrightarrow$ CamR_Ca1_A_CaMKII	
230	reaction_224	Ca binding to CamR_CamKII site B	CamR_CamKII $+$ Ca $\longrightarrow$ CamR_Ca1_B_CaMKII	
231	reaction_225	Ca binding to CamR_CamKII site C	CamR_CamKII $+$ Ca $\longrightarrow$ CamR_Ca1_C_CaMKII	
232	reaction_226	Ca binding to CamR_CamKII site D	CamR_CamKII $+$ Ca $\longrightarrow$ CamR_Ca1_D_CaMKII	
233	reaction_227	Ca dissociating from CamR_Ca1_CamKII site A	CamR_Ca1_A_CaMKII $\longrightarrow$ CamR_CaMKII $+$ Ca	

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234	reaction_228	Ca dissociating from CamR_Ca1_CamKII site C	CamR_Ca1_C_CaMKII $\longrightarrow$ CamR_CaMKII + Ca	
235	reaction_229	Ca dissociating from CamR_Ca1_CamKII site D	CamR_Ca1_D_CaMKII $\longrightarrow$ CamR_CaMKII + Ca	
236	reaction_230	Ca binding to CamR_Ca1_A_CamKII site B	CamR_Ca1_A_CaMKII + Ca $\longrightarrow$ CamR_Ca2_AB_CaMKII	
237	reaction_231	Ca binding to CamR_Ca1_A_CamKII site C	CamR_Ca1_A_CaMKII + Ca $\longrightarrow$ CamR_Ca2_AC_CaMKII	
238	reaction_232	Ca binding to CamR_Ca1_A_CamKII site D	CamR_Ca1_A_CaMKII + Ca $\longrightarrow$ CamR_Ca2_AD_CaMKII	
239	reaction_233	Ca binding to CamR_Ca1_B_CamKII site A	CamR_Ca1_B_CaMKII + Ca $\longrightarrow$ CamR_Ca2_AB_CaMKII	
240	reaction_234	Ca binding to CamR_Ca1_B_CamKII site C	CamR_Ca1_B_CaMKII + Ca $\longrightarrow$ CamR_Ca2_BC_CaMKII	
241	reaction_235	Ca binding to CamR_Ca1_B_CamKII site D	CamR_Ca1_B_CaMKII + Ca $\longrightarrow$ CamR_Ca2_BD_CaMKII	
242	reaction_236	Ca binding to CamR_Ca1_C_CamKII site A	CamR_Ca1_C_CaMKII + Ca $\longrightarrow$ CamR_Ca2_AC_CaMKII	
243	reaction_237	Ca binding to CamR_Ca1_C_CamKII site B	CamR_Ca1_C_CaMKII + Ca $\longrightarrow$ CamR_Ca2_BC_CaMKII	
244	reaction_238	Ca binding to CamR_Ca1_C_CamKII site D	CamR_Ca1_C_CaMKII + Ca $\longrightarrow$ CamR_Ca2_CD_CaMKII	
245	reaction_239	Ca binding to CamR_Ca1_D_CamKII site A	CamR_Ca1_D_CaMKII + Ca $\longrightarrow$ CamR_Ca2_AD_CaMKII	
246	reaction_240	Ca binding to CamR_Ca1_D_CamKII site B	CamR_Ca1_D_CaMKII + Ca $\longrightarrow$ CamR_Ca2_BD_CaMKII	
247	reaction_241	Ca binding to CamR_Ca1_D_CamKII site C	CamR_Ca1_D_CaMKII + Ca $\longrightarrow$ CamR_Ca2_CD_CaMKII	

№	Id	Name			Reaction Equation	SBO
248	reaction_242	Ca dissociating	from	CamR_Ca2_AB-_CamKII site A	CamR_Ca2_AB_CaMKII $\longrightarrow$ CamR_Ca1_B_CaMKII+ Ca	
249	reaction_243	Ca dissociating	from	CamR_Ca2_AB-_CamKII site B	CamR_Ca2_AB_CaMKII $\longrightarrow$ CamR_Ca1_A_CaMKII+ Ca	
250	reaction_244	Ca dissociating	from	CamR_Ca2_AC-_CamKII site A	CamR_Ca2_AC_CaMKII $\longrightarrow$ CamR_Ca1_C_CaMKII+ Ca	
251	reaction_245	Ca dissociating	from	CamR_Ca2_AC-_CamKII site C	CamR_Ca2_AC_CaMKII $\longrightarrow$ CamR_Ca1_A_CaMKII+ Ca	
252	reaction_246	Ca dissociating	from	CamR_Ca2_AD-_CamKII site A	CamR_Ca2_AD_CaMKII $\longrightarrow$ CamR_Ca1_D_CaMKII+ Ca	
253	reaction_247	Ca dissociating	from	CamR_Ca2_AD-_CamKII site D	CamR_Ca2_AD_CaMKII $\longrightarrow$ CamR_Ca1_A_CaMKII+ Ca	
254	reaction_248	Ca dissociating	from	CamR_Ca2_BC-_CamKII site B	CamR_Ca2_BC_CaMKII $\longrightarrow$ CamR_Ca1_C_CaMKII+ Ca	
255	reaction_249	Ca dissociating	from	CamR_Ca2_BC-_CamKII site C	CamR_Ca2_BC_CaMKII $\longrightarrow$ CamR_Ca1_B_CaMKII+ Ca	
256	reaction_250	Ca dissociating	from	CamR_Ca2_BD-_CamKII site B	CamR_Ca2_BD_CaMKII $\longrightarrow$ CamR_Ca1_D_CaMKII+ Ca	
257	reaction_251	Ca dissociating	from	CamR_Ca2_BD-_CamKII site D	CamR_Ca2_BD_CaMKII $\longrightarrow$ CamR_Ca1_B_CaMKII+ Ca	
258	reaction_252	Ca dissociating	from	CamR_Ca2_CD-_CamKII site C	CamR_Ca2_CD_CaMKII $\longrightarrow$ CamR_Ca1_D_CaMKII+ Ca	
259	reaction_253	Ca dissociating	from	CamR_Ca2_CD-_CamKII site D	CamR_Ca2_CD_CaMKII $\longrightarrow$ CamR_Ca1_C_CaMKII+ Ca	
260	reaction_254	Ca binding to CamR_Ca2_AB_CamKII site C			CamR_Ca2_AB_CaMKII + Ca $\longrightarrow$ CamR_Ca3_ABC_CaMKII	
261	reaction_255	Ca binding to CamR_Ca2_AB_CamKII site D			CamR_Ca2_AB_CaMKII + Ca $\longrightarrow$ CamR_Ca3_ABD_CaMKII	

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262	reaction_256	Ca binding to CamR_Ca2_AC_CamKII site B	CamR_Ca2_AC_CaMKII $\longrightarrow$ CamR_Ca3_ABC_CaMKII	$+$
263	reaction_257	Ca binding to CamR_Ca2_AC_CamKII site D	CamR_Ca2_AC_CaMKII $\longrightarrow$ CamR_Ca3_ACD_CaMKII	$+$
264	reaction_258	Ca binding to CamR_Ca2_AD_CamKII site B	CamR_Ca2_AD_CaMKII $\longrightarrow$ CamR_Ca3_ABD_CaMKII	$+$
265	reaction_259	Ca binding to CamR_Ca2_AD_CamKII site C	CamR_Ca2_AD_CaMKII $\longrightarrow$ CamR_Ca3_ACD_CaMKII	$+$
266	reaction_260	Ca binding to CamR_Ca2_BC_CamKII site A	CamR_Ca2_BC_CaMKII $\longrightarrow$ CamR_Ca3_ABC_CaMKII	$+$
267	reaction_261	Ca binding to CamR_Ca2_BC_CamKII site D	CamR_Ca2_BC_CaMKII $\longrightarrow$ CamR_Ca3_BCD_CaMKII	$+$
268	reaction_262	Ca binding to CamR_Ca2_BD_CamKII site A	CamR_Ca2_BD_CaMKII $\longrightarrow$ CamR_Ca3_ABD_CaMKII	$+$
269	reaction_263	Ca binding to CamR_Ca2_BD_CamKII site C	CamR_Ca2_BD_CaMKII $\longrightarrow$ CamR_Ca3_BCD_CaMKII	$+$
270	reaction_264	Ca binding to CamR_Ca2_CD_CamKII site A	CamR_Ca2_CD_CaMKII $\longrightarrow$ CamR_Ca3_ACD_CaMKII	$+$
271	reaction_265	Ca binding to CamR_Ca2_CD_CamKII site B	CamR_Ca2_CD_CaMKII $\longrightarrow$ CamR_Ca3_BCD_CaMKII	$+$
272	reaction_266	Ca dissociating from CamR_Ca3_ABC_CamKII site C	CamR_Ca3_ABC_CaMKII $\longrightarrow$ CamR_Ca2_AB_CaMKII$+$Ca	
273	reaction_267	Ca dissociating from CamR_Ca3_ABC_CamKII site B	CamR_Ca3_ABC_CaMKII $\longrightarrow$ CamR_Ca2_AC_CaMKII$+$Ca	
274	reaction_268	Ca dissociating from CamR_Ca3_ABC_CamKII site A	CamR_Ca3_ABC_CaMKII $\longrightarrow$ CamR_Ca2_BC_CaMKII$+$Ca	
275	reaction_269	Ca dissociating from CamR_Ca3_ABD_CamKII site D	CamR_Ca3_ABD_CaMKII $\longrightarrow$ CamR_Ca2_AB_CaMKII$+$Ca	

№	Id	Name	Reaction Equation	SBO
276	reaction_270	Ca dissociating from CamR_Ca3_ABD-_CamKII site B	CamR_Ca3_ABD_CaMKII ⟶ CamR_Ca2_AD_CaMKII+Ca	
277	reaction_271	Ca dissociating from CamR_Ca3_ABD-_CamKII site A	CamR_Ca3_ABD_CaMKII ⟶ CamR_Ca2_BD_CaMKII+Ca	
278	reaction_272	Ca dissociating from CamR_Ca3_ACD-_CamKII site D	CamR_Ca3_ACD_CaMKII ⟶ CamR_Ca2_AC_CaMKII+Ca	
279	reaction_273	Ca dissociating from CamR_Ca3_ACD-_CamKII site C	CamR_Ca3_ACD_CaMKII ⟶ CamR_Ca2_AD_CaMKII+Ca	
280	reaction_274	Ca dissociating from CamR_Ca3_ACD-_CamKII site A	CamR_Ca3_ACD_CaMKII ⟶ CamR_Ca2_CD_CaMKII+Ca	
281	reaction_275	Ca dissociating from CamR_Ca3_BCD-_CamKII site D	CamR_Ca3_BCD_CaMKII ⟶ CamR_Ca2_BC_CaMKII+Ca	
282	reaction_276	Ca dissociating from CamR_Ca3_BCD-_CamKII site C	CamR_Ca3_BCD_CaMKII ⟶ CamR_Ca2_BD_CaMKII+Ca	
283	reaction_277	Ca dissociating from CamR_Ca3_BCD-_CamKII site B	CamR_Ca3_BCD_CaMKII ⟶ CamR_Ca2_CD_CaMKII+Ca	
284	reaction_278	Ca binding to CamR_Ca3_BCD_CamKII site A	CamR_Ca3_BCD_CaMKII + Ca ⟶ CamR_Ca4_ABCD_CaMKII	
285	reaction_279	Ca binding to CamR_Ca3_ACD_CamKII site B	CamR_Ca3_ACD_CaMKII + Ca ⟶ CamR_Ca4_ABCD_CaMKII	
286	reaction_280	Ca binding to CamR_Ca3_ABD_CamKII site C	CamR_Ca3_ABD_CaMKII + Ca ⟶ CamR_Ca4_ABCD_CaMKII	
287	reaction_281	Ca binding to CamR_Ca3_ABC_CamKII site D	CamR_Ca3_ABC_CaMKII + Ca ⟶ CamR_Ca4_ABCD_CaMKII	
288	reaction_282	Ca dissociating from CamR_Ca4_ABCD-_CamKII site A	CamR_Ca4_ABCD_CaMKII ⟶ CamR_Ca3_BCD_CaMKII+Ca	
289	reaction_283	Ca dissociating from CamR_Ca4_ABCD-_CamKII site B	CamR_Ca4_ABCD_CaMKII ⟶ CamR_Ca3_ACD_CaMKII+Ca	

№	Id	Name	Reaction Equation	SBO
290	reaction_284	Ca dissociating from CamR_Ca4_ABCD-_CamKII site C	CamR_Ca4_ABCD_CaMKII ⟶ CamR_Ca3_ABD_CaMKII+ Ca	
291	reaction_285	Ca dissociating from CamR_Ca4_ABCD-_CamKII site D	CamR_Ca4_ABCD_CaMKII ⟶ CamR_Ca3_ABC_CaMKII+ Ca	
292	reaction_286	Ca binding to CamR_PP2B site A	CamR_PP2B + Ca ⟶ CamR_Ca1_A_PP2B	
293	reaction_287	Ca binding to CamR_PP2B site B	CamR_PP2B + Ca ⟶ CamR_Ca1_B_PP2B	
294	reaction_288	Ca binding to CamR_PP2B site C	CamR_PP2B + Ca ⟶ CamR_Ca1_C_PP2B	
295	reaction_289	Ca binding to CamR_PP2B site D	CamR_PP2B + Ca ⟶ CamR_Ca1_D_PP2B	
296	reaction_290	Ca dissociating from CamR_Ca1_A_PP2B site A	CamR_Ca1_A_PP2B ⟶ CamR_PP2B + Ca	
297	reaction_291	Ca dissociating from CamR_Ca1_B_PP2B site B	CamR_Ca1_B_PP2B ⟶ CamR_PP2B + Ca	
298	reaction_292	Ca dissociating from CamR_Ca1_C_PP2B site C	CamR_Ca1_C_PP2B ⟶ CamR_PP2B + Ca	
299	reaction_293	Ca dissociating from CamR_Ca1_D_PP2B site D	CamR_Ca1_D_PP2B ⟶ CamR_PP2B + Ca	
300	reaction_294	Ca binding to CamR_Ca1_A_PP2B site B	CamR_Ca1_A_PP2B + Ca ⟶ CamR_Ca2_AB_PP2B	+
301	reaction_295	Ca binding to CamR_Ca1_A_PP2B site C	CamR_Ca1_A_PP2B + Ca ⟶ CamR_Ca2_AC_PP2B	+
302	reaction_296	Ca binding to CamR_Ca1_A_PP2B site D	CamR_Ca1_A_PP2B + Ca ⟶ CamR_Ca2_AD_PP2B	+
303	reaction_297	Ca binding to CamR_Ca1_B_PP2B site A	CamR_Ca1_B_PP2B + Ca ⟶ CamR_Ca2_AB_PP2B	+
304	reaction_298	Ca binding to CamR_Ca1_B_PP2B site C	CamR_Ca1_B_PP2B + Ca ⟶ CamR_Ca2_BC_PP2B	+
305	reaction_299	Ca binding to CamR_Ca1_B_PP2B site D	CamR_Ca1_B_PP2B + Ca ⟶ CamR_Ca2_BD_PP2B	+

№	Id	Name	Reaction Equation	SBO
306	reaction_300	Ca binding to CamR_Ca1_C_PP2B site A	CamR_Ca1_C_PP2B + Ca ⟶ CamR_Ca2_AC_PP2B	+
307	reaction_301	Ca binding to CamR_Ca1_C_PP2B site B	CamR_Ca1_C_PP2B + Ca ⟶ CamR_Ca2_BC_PP2B	+
308	reaction_302	Ca binding to CamR_Ca1_C_PP2B site D	CamR_Ca1_C_PP2B + Ca ⟶ CamR_Ca2_CD_PP2B	+
309	reaction_303	Ca binding to CamR_Ca1_D_PP2B site A	CamR_Ca1_D_PP2B + Ca ⟶ CamR_Ca2_AD_PP2B	+
310	reaction_304	Ca binding to CamR_Ca1_D_PP2B site B	CamR_Ca1_D_PP2B + Ca ⟶ CamR_Ca2_BD_PP2B	+
311	reaction_305	Ca binding to CamR_Ca1_D_PP2B site C	CamR_Ca1_D_PP2B + Ca ⟶ CamR_Ca2_CD_PP2B	+
312	reaction_306	Ca dissociating from CamR_Ca2_AB_PP2B site A	CamR_Ca2_AB_PP2B ⟶ CamR_Ca1_B_PP2B + Ca	+
313	reaction_307	Ca dissociating from CamR_Ca2_AB_PP2B site B	CamR_Ca2_AB_PP2B ⟶ CamR_Ca1_A_PP2B + Ca	+
314	reaction_308	Ca dissociating from CamR_Ca2_AC_PP2B site A	CamR_Ca2_AC_PP2B ⟶ CamR_Ca1_C_PP2B + Ca	+
315	reaction_309	Ca dissociating from CamR_Ca2_AC_PP2B site C	CamR_Ca2_AC_PP2B ⟶ CamR_Ca1_A_PP2B + Ca	+
316	reaction_310	Ca dissociating from CamR_Ca2_AD_PP2B site A	CamR_Ca2_AD_PP2B ⟶ CamR_Ca1_D_PP2B + Ca	+
317	reaction_311	Ca dissociating from CamR_Ca2_AD_PP2B site D	CamR_Ca2_AD_PP2B ⟶ CamR_Ca1_A_PP2B + Ca	+
318	reaction_312	Ca dissociating from CamR_Ca2_BC_PP2B site B	CamR_Ca2_BC_PP2B ⟶ CamR_Ca1_C_PP2B + Ca	+
319	reaction_313	Ca dissociating from CamR_Ca2_BC_PP2B site C	CamR_Ca2_BC_PP2B ⟶ CamR_Ca1_B_PP2B + Ca	+

№	Id	Name	Reaction Equation	SBO
320	reaction_314	Ca dissociating from CamR_Ca2_BD_PP2B site B	CamR_Ca2_BD_PP2B ⟶ CamR_Ca1_D_PP2B + Ca	
321	reaction_315	Ca dissociating from CamR_Ca2_BD_PP2B site D	CamR_Ca2_BD_PP2B ⟶ CamR_Ca1_B_PP2B + Ca	
322	reaction_316	Ca dissociating from CamR_Ca2_CD_PP2B site C	CamR_Ca2_CD_PP2B ⟶ CamR_Ca1_D_PP2B + Ca	
323	reaction_317	Ca dissociating from CamR_Ca2_CD_PP2B site D	CamR_Ca2_CD_PP2B ⟶ CamR_Ca1_C_PP2B + Ca	
324	reaction_318	Ca binding to CamR_Ca2_AB_PP2B site C	CamR_Ca2_AB_PP2B + Ca ⟶ CamR_Ca3_ABC_PP2B	
325	reaction_319	Ca binding to CamR_Ca2_AB_PP2B site D	CamR_Ca2_AB_PP2B + Ca ⟶ CamR_Ca3_ABD_PP2B	
326	reaction_320	Ca binding to CamR_Ca2_AC_PP2B site B	CamR_Ca2_AC_PP2B + Ca ⟶ CamR_Ca3_ABC_PP2B	
327	reaction_321	Ca binding to CamR_Ca2_AC_PP2B site D	CamR_Ca2_AC_PP2B + Ca ⟶ CamR_Ca3_ACD_PP2B	
328	reaction_322	Ca binding to CamR_Ca2_AD_PP2B site B	CamR_Ca2_AD_PP2B + Ca ⟶ CamR_Ca3_ABD_PP2B	
329	reaction_323	Ca binding to CamR_Ca2_AD_PP2B site C	CamR_Ca2_AD_PP2B + Ca ⟶ CamR_Ca3_ACD_PP2B	
330	reaction_324	Ca binding to CamR_Ca2_BC_PP2B site A	CamR_Ca2_BC_PP2B + Ca ⟶ CamR_Ca3_ABC_PP2B	
331	reaction_325	Ca binding to CamR_Ca2_BC_PP2B site D	CamR_Ca2_BC_PP2B + Ca ⟶ CamR_Ca3_BCD_PP2B	
332	reaction_326	Ca binding to CamR_Ca2_BD_PP2B site A	CamR_Ca2_BD_PP2B + Ca ⟶ CamR_Ca3_ABD_PP2B	
333	reaction_327	Ca binding to CamR_Ca2_BD_PP2B site C	CamR_Ca2_BD_PP2B + Ca ⟶ CamR_Ca3_BCD_PP2B	

№	Id	Name	Reaction Equation	SBO
334	reaction_328	Ca binding to CamR_Ca2_CD_PP2B site A	CamR_Ca2_CD_PP2B + Ca ⟶ CamR_Ca3_ACD_PP2B	+
335	reaction_329	Ca binding to CamR_Ca2_CD_PP2B site B	CamR_Ca2_CD_PP2B + Ca ⟶ CamR_Ca3_BCD_PP2B	+
336	reaction_330	Ca dissociating from CamR_Ca3_ABC_PP2B site A	CamR_Ca3_ABC_PP2B ⟶ CamR_Ca2_BC_PP2B + Ca	
337	reaction_331	Ca dissociating from CamR_Ca3_ABC_PP2B site B	CamR_Ca3_ABC_PP2B ⟶ CamR_Ca2_AC_PP2B + Ca	
338	reaction_332	Ca dissociating from CamR_Ca3_ABC_PP2B site C	CamR_Ca3_ABC_PP2B ⟶ CamR_Ca2_AB_PP2B + Ca	
339	reaction_333	Ca dissociating from CamR_Ca3_ABD_PP2B site A	CamR_Ca3_ABD_PP2B ⟶ CamR_Ca2_BD_PP2B + Ca	
340	reaction_334	Ca dissociating from CamR_Ca3_ABD_PP2B site B	CamR_Ca3_ABD_PP2B ⟶ CamR_Ca2_AD_PP2B + Ca	
341	reaction_335	Ca dissociating from CamR_Ca3_ABD_PP2B site D	CamR_Ca3_ABD_PP2B ⟶ CamR_Ca2_AB_PP2B + Ca	
342	reaction_336	Ca dissociating from CamR_Ca3_ACD_PP2B site A	CamR_Ca3_ACD_PP2B ⟶ CamR_Ca2_CD_PP2B + Ca	
343	reaction_337	Ca dissociating from CamR_Ca3_ACD_PP2B site C	CamR_Ca3_ACD_PP2B ⟶ CamR_Ca2_AD_PP2B + Ca	
344	reaction_338	Ca dissociating from CamR_Ca3_ACD_PP2B site D	CamR_Ca3_ACD_PP2B ⟶ CamR_Ca2_AC_PP2B + Ca	
345	reaction_339	Ca dissociating from CamR_Ca3_BCD_PP2B site B	CamR_Ca3_BCD_PP2B ⟶ CamR_Ca2_CD_PP2B + Ca	
346	reaction_340	Ca dissociating from CamR_Ca3_BCD_PP2B site C	CamR_Ca3_BCD_PP2B ⟶ CamR_Ca2_BD_PP2B + Ca	
347	reaction_341	Ca dissociating from CamR_Ca3_BCD_PP2B site D	CamR_Ca3_BCD_PP2B ⟶ CamR_Ca2_BC_PP2B + Ca	

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348	reaction_342	Ca binding to CamR_Ca3_ABC_PP2B site D	CamR_Ca3_ABC_PP2B + Ca $\longrightarrow$ CamR_Ca4_ABCD_PP2B	+
349	reaction_343	Ca binding to CamR_Ca3_ABD_PP2B site C	CamR_Ca3_ABD_PP2B + Ca $\longrightarrow$ CamR_Ca4_ABCD_PP2B	+
350	reaction_344	Ca binding to CamR_Ca3_ACD_PP2B site B	CamR_Ca3_ACD_PP2B + Ca $\longrightarrow$ CamR_Ca4_ABCD_PP2B	+
351	reaction_345	Ca binding to CamR_Ca3_BCD_PP2B site A	CamR_Ca3_BCD_PP2B + Ca $\longrightarrow$ CamR_Ca4_ABCD_PP2B	+
352	reaction_346	Ca dissociating from CamR_Ca4_ABCD_PP2B site A	CamR_Ca4_ABCD_PP2B $\longrightarrow$ CamR_Ca3_BCD_PP2B + Ca	
353	reaction_347	Ca dissociating from CamR_Ca4_ABCD_PP2B site B	CamR_Ca4_ABCD_PP2B $\longrightarrow$ CamR_Ca3_ACD_PP2B + Ca	
354	reaction_348	Ca dissociating from CamR_Ca4_ABCD_PP2B site C	CamR_Ca4_ABCD_PP2B $\longrightarrow$ CamR_Ca3_ABD_PP2B + Ca	
355	reaction_349	Ca dissociating from CamR_Ca4_ABCD_PP2B site D	CamR_Ca4_ABCD_PP2B $\longrightarrow$ CamR_Ca3_ABC_PP2B + Ca	
356	reaction_350	Ca dissociating from CamR_Ca1_CamKII site B	CamR_Ca1_B_CaMKII $\longrightarrow$ CamR_CaMKII + Ca	
357	reaction_351	Ca dissociating from CamT_Ca3_ABC site C	CamT_Ca3_ABC $\longrightarrow$ CamT_Ca2_AB + Ca	
358	reaction_352	CamR_CaMKII Phosphorylation	CamR_CaMKII $\longrightarrow$ CamR_CaMKIIp	
359	reaction_353	CamR_Ca1_A_CaMKII phosphorylation	CamR_Ca1_A_CaMKII $\longrightarrow$ CamR_Ca1_A_CaMKIIp	
360	reaction_354	CamR_Ca1_B_CaMKII Phosphorylation	CamR_Ca1_B_CaMKII $\longrightarrow$ CamR_Ca1_B_CaMKIIp	
361	reaction_355	CamR_Ca1_C_CaMKII phosphorylation	CamR_Ca1_C_CaMKII $\longrightarrow$ CamR_Ca1_C_CaMKIIp	
362	reaction_356	CamR_Ca1_D_CaMKII phosphorylation	CamR_Ca1_D_CaMKII $\longrightarrow$ CamR_Ca1_D_CaMKIIp	
363	reaction_357	CamR_Ca2_AB_CaMKII phosphorylation	CamR_Ca2_AB_CaMKII $\longrightarrow$ CamR_Ca2_AB_CaMKIIp	
364	reaction_358	CamR_Ca2_AC_CaMKII phosphorylation	CamR_Ca2_AC_CaMKII $\longrightarrow$ CamR_Ca2_AC_CaMKIIp	
365	reaction_359	CamR_Ca2_AD_CaMKII phosphorylation	CamR_Ca2_AD_CaMKII $\longrightarrow$ CamR_Ca2_AD_CaMKIIp	
366	reaction_360	CamR_Ca2_BC_CaMKII phosphorylation	CamR_Ca2_BC_CaMKII $\longrightarrow$ CamR_Ca2_BC_CaMKIIp	
367	reaction_361	CamR_Ca2_BD_CaMKII phosphorylation	CamR_Ca2_BD_CaMKII $\longrightarrow$ CamR_Ca2_BD_CaMKIIp	

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368	reaction_362	CamR_Ca2_CD_CaMKII phosphorylation	CamR_Ca2_CD_CaMKII ⟶ CamR_Ca2_CD_CaMKIIp	
369	reaction_363	CamR_Ca3_ABC_CaMKII phosphorylation	CamR_Ca3_ABC_CaMKII ⟶ CamR_Ca3_ABC_CaMKIIp	
370	reaction_364	CamR_Ca3_ABD_CaMKII phosphorylation	CamR_Ca3_ABD_CaMKII ⟶ CamR_Ca3_ABD_CaMKIIp	
371	reaction_365	CamR_Ca3_ACD_CaMKII phosphorylation	CamR_Ca3_ACD_CaMKII ⟶ CamR_Ca3_ACD_CaMKIIp	
372	reaction_366	CamR_Ca3_BCD_CaMKII phosphorylation	CamR_Ca3_BCD_CaMKII ⟶ CamR_Ca3_BCD_CaMKIIp	
373	reaction_367	CamR_Ca4_ABCD_CaMKII phosphorylation	CamR_Ca4_ABCD_CaMKII ⟶ CamR_Ca4_ABCD_CaMKIIp	
374	reaction_368	CaMKIIp binding to CamR	CamR + CaMKIIp ⟶ CamR_CaMKIIp	
375	reaction_369	CaMKIIp dissociating from CamR_CaMKIIp	CamR_CaMKIIp ⟶ CamR + CaMKIIp	
376	reaction_370	CaMKIIp binding to CamR_Ca1_A	CamR_Ca1_A + CaMKIIp ⟶ CamR_Ca1_A_CaMKIIp	
377	reaction_371	CaMKIIp dissociating from CamR_Ca1_A-_CaMKIIp	CamR_Ca1_A_CaMKIIp ⟶ CamR_Ca1_A + CaMKIIp	
378	reaction_372	CaMKIIp binding to CamR_Ca1_B	CamR_Ca1_B + CaMKIIp ⟶ CamR_Ca1_B_CaMKIIp	
379	reaction_373	CaMKIIp dissociating from CamR_Ca1_B-_CaMKIIp	CamR_Ca1_B_CaMKIIp ⟶ CamR_Ca1_B + CaMKIIp	
380	reaction_374	CaMKIIp binding to CamR_Ca1_C	CamR_Ca1_C + CaMKIIp ⟶ CamR_Ca1_C_CaMKIIp	
381	reaction_375	CaMKIIp dissociating from CamR_Ca1_C-_CaMKIIp	CamR_Ca1_C_CaMKIIp ⟶ CamR_Ca1_C + CaMKIIp	
382	reaction_376	CaMKIIp binding to CamR_Ca1_D	CamR_Ca1_D + CaMKIIp ⟶ CamR_Ca1_D_CaMKIIp	
383	reaction_377	CaMKIIp dissociating from CamR_Ca1_D-_CaMKIIp	CamR_Ca1_D_CaMKIIp ⟶ CamR_Ca1_D + CaMKIIp	
384	reaction_378	CaMKIIp binding to CamR_Ca2_AB	CamR_Ca2_AB + CaMKIIp ⟶ CamR_Ca2_AB_CaMKIIp	
385	reaction_379	CaMKIIp dissociating from CamR_Ca2_AB-_CaMKIIp	CamR_Ca2_AB_CaMKIIp ⟶ CamR_Ca2_AB + CaMKIIp	
386	reaction_380	CaMKIIp binding to CamR_Ca2_AC	CamR_Ca2_AC + CaMKIIp ⟶ CamR_Ca2_AC_CaMKIIp	
387	reaction_381	CaMKIIp dissociating from CamR_Ca2_AC-_CaMKIIp	CamR_Ca2_AC_CaMKIIp ⟶ CamR_Ca2_AC + CaMKIIp	
388	reaction_382	CaMKIIp binding to CamR_Ca2_AD	CamR_Ca2_AD + CaMKIIp ⟶ CamR_Ca2_AD_CaMKIIp	
389	reaction_383	CaMKIIp dissociating from CamR_Ca2_AD-_CaMKIIp	CamR_Ca2_AD_CaMKIIp ⟶ CamR_Ca2_AD + CaMKIIp	

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390	reaction_384	CaMKIIp binding to CamR_Ca2_BC	CamR_Ca2_BC+CaMKIIp ⟶ CamR_Ca2_BC_CaMKIIp	
391	reaction_385	CaMKIIp dissociating from CamR_Ca2_BC-_CaMKIIp	CamR_Ca2_BC_CaMKIIp ⟶ CamR_Ca2_BC + CaMKIIp	
392	reaction_386	CaMKIIp binding to CamR_Ca2_BD	CamR_Ca2_BD+CaMKIIp ⟶ CamR_Ca2_BD_CaMKIIp	
393	reaction_387	CaMKIIp dissociating from CamR_Ca2_BD-_CaMKIIp	CamR_Ca2_BD_CaMKIIp ⟶ CamR_Ca2_BD + CaMKIIp	
394	reaction_388	CaMKIIp binding to CamR_Ca2_CD	CamR_Ca2_CD+CaMKIIp ⟶ CamR_Ca2_CD_CaMKIIp	
395	reaction_389	CaMKIIp dissociating from CamR_Ca2_CD-_CaMKIIp	CamR_Ca2_CD_CaMKIIp ⟶ CamR_Ca2_CD + CaMKIIp	
396	reaction_390	CaMKIIp binding to CamR_Ca3_ABC	CamR_Ca3_ABC + CaMKIIp ⟶ CamR_Ca3_ABC_CaMKIIp	
397	reaction_391	CaMKIIp dissociating from CamR_Ca3-_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp ⟶ CamR_Ca3_ABC+ CaMKIIp	
398	reaction_392	CaMKIIp binding to CamR_Ca3_ABD	CamR_Ca3_ABD + CaMKIIp ⟶ CamR_Ca3_ABD_CaMKIIp	
399	reaction_393	CaMKIIp dissociating from CamR_Ca3-_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp ⟶ CamR_Ca3_ABD+ CaMKIIp	
400	reaction_394	CaMKIIp binding to CamR_Ca3_ACD	CamR_Ca3_ACD + CaMKIIp ⟶ CamR_Ca3_ACD_CaMKIIp	
401	reaction_395	CaMKIIp dissociating from CamR_Ca3-_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp ⟶ CamR_Ca3_ACD+ CaMKIIp	
402	reaction_396	CaMKIIp binding to CamR_Ca3_BCD	CamR_Ca3_BCD + CaMKIIp ⟶ CamR_Ca3_BCD_CaMKIIp	
403	reaction_397	CaMKIIp dissociating from CamR_Ca3-_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp ⟶ CamR_Ca3_BCD+ CaMKIIp	
404	reaction_398	CaMKIIp binding to CamR_Ca4_ABCD	CamR_Ca4_ABCD + CaMKIIp ⟶ CamR_Ca4_ABCD_CaMKIIp	
405	reaction_399	CaMKIIp dissociating from CamR_Ca4-_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp ⟶ CamR_Ca4_ABCD+ CaMKIIp	

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406	reaction_504	Ca binding to CamR_CaMKIIp site A	CamR_CaMKIIp + Ca $\longrightarrow$ CamR_Ca1_A_CaMKIIp	
407	reaction_505	Ca binding to CamR_CaMKIIp site B	CamR_CaMKIIp + Ca $\longrightarrow$ CamR_Ca1_B_CaMKIIp	
408	reaction_506	Ca binding to CamR_CaMKIIp site C	CamR_CaMKIIp + Ca $\longrightarrow$ CamR_Ca1_C_CaMKIIp	
409	reaction_507	Ca binding to CamR_CaMKIIp site D	CamR_CaMKIIp + Ca $\longrightarrow$ CamR_Ca1_D_CaMKIIp	
410	reaction_508	Ca dissociating from CamR_Ca1_A-_CaMKIIp site A	CamR_Ca1_A_CaMKIIp $\longrightarrow$ CamR_CaMKIIp + Ca	
411	reaction_567	Ca dissociating from CamR_Ca1_B-_CaMKIIp site B	CamR_Ca1_B_CaMKIIp $\longrightarrow$ CamR_CaMKIIp + Ca	
412	reaction_509	Ca dissociating from CamR_Ca1_C-_CaMKIIp site C	CamR_Ca1_C_CaMKIIp $\longrightarrow$ CamR_CaMKIIp + Ca	
413	reaction_510	Ca dissociating from CamR_Ca1_D-_CaMKIIp site D	CamR_Ca1_D_CaMKIIp $\longrightarrow$ CamR_CaMKIIp + Ca	
414	reaction_511	Ca binding to CamR_Ca1_A_CaMKIIp site B	CamR_Ca1_A_CaMKIIp + Ca $\longrightarrow$ CamR_Ca2_AB_CaMKIIp	
415	reaction_512	Ca binding to CamR_Ca1_A_CaMKIIp site C	CamR_Ca1_A_CaMKIIp + Ca $\longrightarrow$ CamR_Ca2_AC_CaMKIIp	
416	reaction_513	Ca binding to CamR_Ca1_A_CaMKIIp site D	CamR_Ca1_A_CaMKIIp + Ca $\longrightarrow$ CamR_Ca2_AD_CaMKIIp	
417	reaction_514	Ca binding to CamR_Ca1_B_CaMKIIp site A	CamR_Ca1_B_CaMKIIp + Ca $\longrightarrow$ CamR_Ca2_AB_CaMKIIp	
418	reaction_515	Ca binding to CamR_Ca1_B_CaMKIIp site C	CamR_Ca1_B_CaMKIIp + Ca $\longrightarrow$ CamR_Ca2_BC_CaMKIIp	
419	reaction_516	Ca binding to CamR_Ca1_B_CaMKIIp site D	CamR_Ca1_B_CaMKIIp + Ca $\longrightarrow$ CamR_Ca2_BD_CaMKIIp	
420	reaction_517	Ca binding to CamR_Ca1_C_CaMKIIp site A	CamR_Ca1_C_CaMKIIp + Ca $\longrightarrow$ CamR_Ca2_AC_CaMKIIp	
421	reaction_518	Ca binding to CamR_Ca1_C_CaMKIIp site B	CamR_Ca1_C_CaMKIIp + Ca $\longrightarrow$ CamR_Ca2_BC_CaMKIIp	

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422	reaction_519	Ca binding to CamR_Ca1_C_CaMKIIp site D	CamR_Ca1_C_CaMKIIp + Ca ⟶ CamR_Ca2_CD_CaMKIIp	+
423	reaction_520	Ca binding to CamR_Ca1_D_CaMKIIp site A	CamR_Ca1_D_CaMKIIp + Ca ⟶ CamR_Ca2_AD_CaMKIIp	+
424	reaction_521	Ca binding to CamR_Ca1_D_CaMKIIp site B	CamR_Ca1_D_CaMKIIp + Ca ⟶ CamR_Ca2_BD_CaMKIIp	+
425	reaction_522	Ca binding to CamR_Ca1_D_CaMKIIp site C	CamR_Ca1_D_CaMKIIp + Ca ⟶ CamR_Ca2_CD_CaMKIIp	+
426	reaction_523	Ca dissociating from CamR_Ca2_AB-_CaMKIIp site A	CamR_Ca2_AB_CaMKIIp ⟶ CamR_Ca1_B_CaMKIIp+ Ca	
427	reaction_524	Ca dissociating from CamR_Ca2_AB-_CaMKIIp site B	CamR_Ca2_AB_CaMKIIp ⟶ CamR_Ca1_A_CaMKIIp+ Ca	
428	reaction_525	Ca dissociating from CamR_Ca2_AC-_CaMKIIp site A	CamR_Ca2_AC_CaMKIIp ⟶ CamR_Ca1_C_CaMKIIp+ Ca	
429	reaction_526	Ca dissociating from CamR_Ca2_AC-_CaMKIIp site C	CamR_Ca2_AC_CaMKIIp ⟶ CamR_Ca1_A_CaMKIIp+ Ca	
430	reaction_527	Ca dissociating from CamR_Ca2_AD-_CaMKIIp site A	CamR_Ca2_AD_CaMKIIp ⟶ CamR_Ca1_D_CaMKIIp+ Ca	
431	reaction_528	Ca dissociating from CamR_Ca2_AD-_CaMKIIp site D	CamR_Ca2_AD_CaMKIIp ⟶ CamR_Ca1_A_CaMKIIp+ Ca	
432	reaction_529	Ca dissociating from CamR_Ca2_BC-_CaMKIIp site B	CamR_Ca2_BC_CaMKIIp ⟶ CamR_Ca1_C_CaMKIIp+ Ca	
433	reaction_530	Ca dissociating from CamR_Ca2_BC-_CaMKIIp site C	CamR_Ca2_BC_CaMKIIp ⟶ CamR_Ca1_B_CaMKIIp+ Ca	
434	reaction_531	Ca dissociating from CamR_Ca2_BD-_CaMKIIp site B	CamR_Ca2_BD_CaMKIIp ⟶ CamR_Ca1_D_CaMKIIp+ Ca	
435	reaction_532	Ca dissociating from CamR_Ca2_BD-_CaMKIIp site D	CamR_Ca2_BD_CaMKIIp ⟶ CamR_Ca1_B_CaMKIIp+ Ca	

№	Id	Name	Reaction Equation	SBO
436	reaction_533	Ca dissociating from CamR_Ca2_CD_CaMKIIp site C	CamR_Ca2_CD_CaMKIIp $\longrightarrow$ CamR_Ca1_D_CaMKIIp+Ca	
437	reaction_534	Ca dissociating from CamR_Ca2_CD_CaMKIIp site D	CamR_Ca2_CD_CaMKIIp $\longrightarrow$ CamR_Ca1_C_CaMKIIp+Ca	
438	reaction_535	Ca binding to CamR_Ca2_AB_CaMKIIp site C	CamR_Ca2_AB_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ABC_CaMKIIp	+
439	reaction_536	Ca binding to CamR_Ca2_AB_CaMKIIp site D	CamR_Ca2_AB_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ABD_CaMKIIp	+
440	reaction_537	Ca binding to CamR_Ca2_AC_CaMKIIp site B	CamR_Ca2_AC_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ABC_CaMKIIp	+
441	reaction_538	Ca binding to CamR_Ca2_AC_CaMKIIp site D	CamR_Ca2_AC_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ACD_CaMKIIp	+
442	reaction_539	Ca binding to CamR_Ca2_AD_CaMKIIp site B	CamR_Ca2_AD_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ABD_CaMKIIp	+
443	reaction_540	Ca binding to CamR_Ca2_AD_CaMKIIp site C	CamR_Ca2_AD_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ACD_CaMKIIp	+
444	reaction_541	Ca binding to CamR_Ca2_BC_CaMKIIp site A	CamR_Ca2_BC_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ABC_CaMKIIp	+
445	reaction_542	Ca binding to CamR_Ca2_BC_CaMKIIp site D	CamR_Ca2_BC_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_BCD_CaMKIIp	+
446	reaction_543	Ca binding to CamR_Ca2_BD_CaMKIIp site A	CamR_Ca2_BD_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ABD_CaMKIIp	+
447	reaction_544	Ca binding to CamR_Ca2_BD_CaMKIIp site C	CamR_Ca2_BD_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_BCD_CaMKIIp	+
448	reaction_545	Ca binding to CamR_Ca2_CD_CaMKIIp site A	CamR_Ca2_CD_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_ACD_CaMKIIp	+
449	reaction_546	Ca binding to CamR_Ca2_CD_CaMKIIp site B	CamR_Ca2_CD_CaMKIIp + Ca $\longrightarrow$ CamR_Ca3_BCD_CaMKIIp	+

№	Id	Name	Reaction Equation	SBO
450	reaction_547	Ca dissociating from CamR_Ca3_ABC-_CaMKIIp site C	CamR_Ca3_ABC_CaMKIIp ⟶ CamR_Ca2_AB_CaMKIIp+Ca	
451	reaction_548	Ca dissociating from CamR_Ca3_ABC-_CaMKIIp site B	CamR_Ca3_ABC_CaMKIIp ⟶ CamR_Ca2_AC_CaMKIIp+Ca	
452	reaction_549	Ca dissociating from CamR_Ca3_ABC-_CaMKIIp site A	CamR_Ca3_ABC_CaMKIIp ⟶ CamR_Ca2_BC_CaMKIIp+Ca	
453	reaction_550	Ca dissociating from CamR_Ca3_ABD-_CaMKIIp site D	CamR_Ca3_ABD_CaMKIIp ⟶ CamR_Ca2_AB_CaMKIIp+Ca	
454	reaction_551	Ca dissociating from CamR_Ca3_ABD-_CaMKIIp site B	CamR_Ca3_ABD_CaMKIIp ⟶ CamR_Ca2_AD_CaMKIIp+Ca	
455	reaction_552	Ca dissociating from CamR_Ca3_ABD-_CaMKIIp site A	CamR_Ca3_ABD_CaMKIIp ⟶ CamR_Ca2_BD_CaMKIIp+Ca	
456	reaction_553	Ca dissociating from CamR_Ca3_ACD-_CaMKIIp site D	CamR_Ca3_ACD_CaMKIIp ⟶ CamR_Ca2_AC_CaMKIIp+Ca	
457	reaction_554	Ca dissociating from CamR_Ca3_ACD-_CaMKIIp site C	CamR_Ca3_ACD_CaMKIIp ⟶ CamR_Ca2_AD_CaMKIIp+Ca	
458	reaction_555	Ca dissociating from CamR_Ca3_ACD-_CaMKIIp site A	CamR_Ca3_ACD_CaMKIIp ⟶ CamR_Ca2_CD_CaMKIIp+Ca	
459	reaction_556	Ca dissociating from CamR_Ca3_BCD-_CaMKIIp site D	CamR_Ca3_BCD_CaMKIIp ⟶ CamR_Ca2_BC_CaMKIIp+Ca	
460	reaction_557	Ca dissociating from CamR_Ca3_BCD-_CaMKIIp site C	CamR_Ca3_BCD_CaMKIIp ⟶ CamR_Ca2_BD_CaMKIIp+Ca	
461	reaction_558	Ca dissociating from CamR_Ca3_BCD-_CaMKIIp site B	CamR_Ca3_BCD_CaMKIIp ⟶ CamR_Ca2_CD_CaMKIIp+Ca	
462	reaction_559	Ca binding to CamR_Ca3_BCD_CaMKIIp site A	CamR_Ca3_BCD_CaMKIIp + Ca ⟶ CamR_Ca4_ABCD_CaMKIIp	
463	reaction_560	Ca binding to CamR_Ca3_ACD_CaMKIIp site B	CamR_Ca3_ACD_CaMKIIp + Ca ⟶ CamR_Ca4_ABCD_CaMKIIp	

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464	reaction_561	Ca binding to CamR_Ca3_ABD_CaMKIIp site C	CamR_Ca3_ABD_CaMKIIp + Ca ⟶ CamR_Ca4_ABCD_CaMKIIp	
465	reaction_562	Ca binding to CamR_Ca3_ABC_CaMKIIp site D	CamR_Ca3_ABC_CaMKIIp + Ca ⟶ CamR_Ca4_ABCD_CaMKIIp	
466	reaction_563	Ca dissociating from CamR_Ca4_ABCD-_CaMKIIp site A	CamR_Ca4_ABCD_CaMKIIp ⟶ CamR_Ca3_BCD_CaMKIIp + Ca	
467	reaction_564	Ca dissociating from CamR_Ca4_ABCD-_CaMKIIp site B	CamR_Ca4_ABCD_CaMKIIp ⟶ CamR_Ca3_ACD_CaMKIIp + Ca	
468	reaction_565	Ca dissociating from CamR_Ca4_ABCD-_CaMKIIp site C	CamR_Ca4_ABCD_CaMKIIp ⟶ CamR_Ca3_ABD_CaMKIIp + Ca	
469	reaction_566	Ca dissociating from CamR_Ca4_ABCD-_CaMKIIp site D	CamR_Ca4_ABCD_CaMKIIp ⟶ CamR_Ca3_ABC_CaMKIIp + Ca	
470	reaction_400	D binding to PKA	D + PKA ⟶ D_PKA	
471	reaction_401	D dissociating from D_PKA	D_PKA ⟶ D + PKA	
472	reaction_402	Dp dissociating from D_PKA	D_PKA ⟶ Dp + PKA	
473	reaction_403	Dp binding to CamR_PP2B	Dp + CamR_PP2B ⟶ Dp_CamR_PP2B	
474	reaction_404	Dp dissociating from Dp_CamR_PP2B	Dp_CamR_PP2B ⟶ Dp + CamR_PP2B	
475	reaction_405	D dissociating from Dp_CamR_PP2B	Dp_CamR_PP2B ⟶ D + CamR_PP2B	
476	reaction_406	Dp binding to CamR_Ca1_A_PP2B	Dp + CamR_Ca1_A_PP2B ⟶ Dp_CamR_Ca1_A_PP2B	
477	reaction_407	Dp dissociating from Dp_CamR_Ca1_A-_PP2B	Dp_CamR_Ca1_A_PP2B ⟶ Dp + CamR_Ca1_A_PP2B	
478	reaction_408	D dissociating from Dp_CamR_Ca1_A_PP2B	Dp_CamR_Ca1_A_PP2B ⟶ D + CamR_Ca1_A_PP2B	
479	reaction_409	Dp binding to CamR_Ca1_B_PP2B	Dp + CamR_Ca1_B_PP2B ⟶ Dp_CamR_Ca1_B_PP2B	
480	reaction_410	Dp dissociating from Dp_CamR_Ca1_B-_PP2B	Dp_CamR_Ca1_B_PP2B ⟶ Dp + CamR_Ca1_B_PP2B	
481	reaction_411	D dissociating from Dp_CamR_Ca1_B_PP2B	Dp_CamR_Ca1_B_PP2B ⟶ D + CamR_Ca1_B_PP2B	
482	reaction_412	Dp binding to CamR_Ca1_C_PP2B	Dp + CamR_Ca1_C_PP2B ⟶ Dp_CamR_Ca1_C_PP2B	

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483	reaction_413	Dp dissociating from Dp_CamR_Ca1_C-_PP2B	Dp_CamR_Ca1_C_PP2B $\longrightarrow$ Dp CamR_Ca1_C_PP2B	+
484	reaction_414	D dissociating from Dp_CamR_Ca1_C_PP2B	Dp_CamR_Ca1_C_PP2B $\longrightarrow$ D CamR_Ca1_C_PP2B	+
485	reaction_415	Dp binding to CamR_Ca1_D_PP2B	Dp+CamR_Ca1_D_PP2B $\longrightarrow$ Dp_CamR_Ca1_D_PP2B	
486	reaction_416	Dp dissociating from Dp_CamR_Ca1_D-_PP2B	Dp_CamR_Ca1_D_PP2B $\longrightarrow$ Dp CamR_Ca1_D_PP2B	+
487	reaction_417	D dissociating from Dp_CamR_Ca1_D_PP2B	Dp_CamR_Ca1_D_PP2B $\longrightarrow$ D CamR_Ca1_D_PP2B	+
488	reaction_418	Dp binding to CamR_Ca2_AB_PP2B	Dp+CamR_Ca2_AB_PP2B $\longrightarrow$ Dp_CamR_Ca2_AB_PP2B	
489	reaction_419	Dp dissociating from Dp_CamR_Ca2_AB-_PP2B	Dp_CamR_Ca2_AB_PP2B $\longrightarrow$ Dp CamR_Ca2_AB_PP2B	+
490	reaction_420	D dissociating from Dp_CamR_Ca2_AB-_PP2B	Dp_CamR_Ca2_AB_PP2B $\longrightarrow$ D CamR_Ca2_AB_PP2B	+
491	reaction_421	Dp binding to CamR_Ca2_AC_PP2B	Dp+CamR_Ca2_AC_PP2B $\longrightarrow$ Dp_CamR_Ca2_AC_PP2B	
492	reaction_422	Dp dissociating from Dp_CamR_Ca2_AC-_PP2B	Dp_CamR_Ca2_AC_PP2B $\longrightarrow$ Dp CamR_Ca2_AC_PP2B	+
493	reaction_423	D dissociating from Dp_CamR_Ca2_AC-_PP2B	Dp_CamR_Ca2_AC_PP2B $\longrightarrow$ D CamR_Ca2_AC_PP2B	+
494	reaction_424	Dp binding to CamR_Ca2_AD_PP2B	Dp+CamR_Ca2_AD_PP2B $\longrightarrow$ Dp_CamR_Ca2_AD_PP2B	
495	reaction_425	Dp dissociating from Dp_CamR_Ca2_AD-_PP2B	Dp_CamR_Ca2_AD_PP2B $\longrightarrow$ Dp CamR_Ca2_AD_PP2B	+
496	reaction_426	D dissociating from Dp_CamR_Ca2_AD-_PP2B	Dp_CamR_Ca2_AD_PP2B $\longrightarrow$ D CamR_Ca2_AD_PP2B	+
497	reaction_427	Dp binding to CamR_Ca2_BC_PP2B	Dp+CamR_Ca2_BC_PP2B $\longrightarrow$ Dp_CamR_Ca2_BC_PP2B	
498	reaction_428	Dp dissociating from Dp_CamR_Ca2_BC-_PP2B	Dp_CamR_Ca2_BC_PP2B $\longrightarrow$ Dp CamR_Ca2_BC_PP2B	+
499	reaction_429	D dissociating from Dp_CamR_Ca2_BC-_PP2B	Dp_CamR_Ca2_BC_PP2B $\longrightarrow$ D CamR_Ca2_BC_PP2B	+

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500	reaction_430	Dp binding to CamR_Ca2_BD_PP2B	Dp+CamR_Ca2_BD_PP2B ⟶ Dp_CamR_Ca2_BD_PP2B	
501	reaction_431	Dp dissociating from Dp_CamR_Ca2_BD_PP2B	Dp_CamR_Ca2_BD_PP2B ⟶ Dp + CamR_Ca2_BD_PP2B	
502	reaction_432	D dissociating from Dp_CamR_Ca2_BD_PP2B	Dp_CamR_Ca2_BD_PP2B ⟶ D + CamR_Ca2_BD_PP2B	
503	reaction_433	Dp binding to CamR_Ca2_CD_PP2B	Dp+CamR_Ca2_CD_PP2B ⟶ Dp_CamR_Ca2_CD_PP2B	
504	reaction_434	Dp dissociating from Dp_CamR_Ca2_CD_PP2B	Dp_CamR_Ca2_CD_PP2B ⟶ Dp + CamR_Ca2_CD_PP2B	
505	reaction_435	D dissociating from Dp_CamR_Ca2_CD_PP2B	Dp_CamR_Ca2_CD_PP2B ⟶ D + CamR_Ca2_CD_PP2B	
506	reaction_436	Dp binding to CamR_Ca3_ABC_PP2B	Dp+CamR_Ca3_ABC_PP2B ⟶ Dp_CamR_Ca3_ABC_PP2B	
507	reaction_437	Dp dissociating from Dp_CamR_Ca3_ABC_PP2B	Dp_CamR_Ca3_ABC_PP2B ⟶ Dp + CamR_Ca3_ABC_PP2B	
508	reaction_438	D dissociating from Dp_CamR_Ca3_ABC_PP2B	Dp_CamR_Ca3_ABC_PP2B ⟶ D + CamR_Ca3_ABC_PP2B	
509	reaction_439	Dp binding to CamR_Ca3_ABD_PP2B	Dp+CamR_Ca3_ABD_PP2B ⟶ Dp_CamR_Ca3_ABD_PP2B	
510	reaction_440	Dp dissociating from Dp_CamR_Ca3_ABD_PP2B	Dp_CamR_Ca3_ABD_PP2B ⟶ Dp + CamR_Ca3_ABD_PP2B	
511	reaction_441	D dissociating from Dp_CamR_Ca3_ABD_PP2B	Dp_CamR_Ca3_ABD_PP2B ⟶ D + CamR_Ca3_ABD_PP2B	
512	reaction_442	Dp binding to CamR_Ca3_ACD_PP2B	Dp+CamR_Ca3_ACD_PP2B ⟶ Dp_CamR_Ca3_ACD_PP2B	
513	reaction_443	Dp dissociating from Dp_CamR_Ca3_ACD_PP2B	Dp_CamR_Ca3_ACD_PP2B ⟶ Dp + CamR_Ca3_ACD_PP2B	
514	reaction_444	D dissociating from Dp_CamR_Ca3_ACD_PP2B	Dp_CamR_Ca3_ACD_PP2B ⟶ D + CamR_Ca3_ACD_PP2B	
515	reaction_445	Dp binding to CamR_Ca3_BCD_PP2B	Dp+CamR_Ca3_BCD_PP2B ⟶ Dp_CamR_Ca3_BCD_PP2B	
516	reaction_446	Dp dissociating from Dp_CamR_Ca3_BCD_PP2B	Dp_CamR_Ca3_BCD_PP2B ⟶ Dp + CamR_Ca3_BCD_PP2B	

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517	reaction_447	D dissociating from Dp_CamR_Ca3_BCD_PP2B	Dp_CamR_Ca3_BCD_PP2B $\longrightarrow$ D CamR_Ca3_BCD_PP2B	+
518	reaction_448	Dp binding to CamR_Ca4_ABCD_PP2B	Dp+CamR_Ca4_ABCD_PP2B $\longrightarrow$ Dp_CamR_Ca4_ABCD_PP2B	
519	reaction_449	Dp dissociating from Dp_CamR_Ca4_ABCD_PP2B	Dp_CamR_Ca4_ABCD_PP2B $\longrightarrow$ Dp CamR_Ca4_ABCD_PP2B	+
520	reaction_450	D dissociating from Dp_CamR_Ca4_ABCD_PP2B	Dp_CamR_Ca4_ABCD_PP2B $\longrightarrow$ D CamR_Ca4_ABCD_PP2B	+
521	reaction_451	Dp binding to PP1a	PP1a+Dp $\longrightarrow$ PP1a_Dp	
522	reaction_452	Dp dissociating from PP1a	PP1a_Dp $\longrightarrow$ PP1a+Dp	
523	reaction_453	CaMKIIp binding to PP1a	CaMKIIp+PP1a $\longrightarrow$ CaMKIIp_PP1a	
524	reaction_454	CaMKIIp dissociating from CaMKIIp_PP1a	CaMKIIp_PP1a $\longrightarrow$ CaMKIIp+PP1a	
525	reaction_455	CaMKII dissociating from CaMKIIp_PP1a	CaMKIIp_PP1a $\longrightarrow$ CaMKII+PP1a	
526	reaction_456	CamR_CaMKIIp binding to PP1a	CamR_CaMKIIp + PP1a $\longrightarrow$ CamR_CaMKIIp_PP1a	+
527	reaction_457	CamR_CaMKIIp dissociating from CamR_CaMKIIp_PP1a	CamR_CaMKIIp_PP1a $\longrightarrow$ CamR_CaMKIIp PP1a	+
528	reaction_458	CamR_CaMKIIp_PP1a dephosphorylation	CamR_CaMKIIp_PP1a $\longrightarrow$ CamR_CaMKII+PP1a	
529	reaction_459	CamR_Ca1_A_CaMKIIp binding to PP1a	CamR_Ca1_A_CaMKIIp + PP1a $\longrightarrow$ CamR_Ca1_A_CaMKIIp_PP1a	+
530	reaction_460	CamR_Ca1_A_CaMKIIp dissociating from CamR_Ca1_A_CaMKIIp_PP1a	CamR_Ca1_A_CaMKIIp_PP1a $\longrightarrow$ CamR_Ca1_A_CaMKIIp+ PP1a	
531	reaction_461	CamR_Ca1_A_CaMKIIp_PP1a dephosphorylation	CamR_Ca1_A_CaMKIIp_PP1a $\longrightarrow$ CamR_Ca1_A_CaMKII+ PP1a	
532	reaction_462	CamR_Ca1_B_CaMKIIp binding to PP1a	CamR_Ca1_B_CaMKIIp + PP1a $\longrightarrow$ CamR_Ca1_B_CaMKIIp_PP1a	+
533	reaction_463	CamR_Ca1_B_CaMKIIp dissociating from CamR_Ca1_B_CaMKIIp_PP1a	CamR_Ca1_B_CaMKIIp_PP1a $\longrightarrow$ CamR_Ca1_B_CaMKIIp+ PP1a	
534	reaction_464	CamR_Ca1_B_CaMKIIp_PP1a dephosphorylation	CamR_Ca1_B_CaMKIIp_PP1a $\longrightarrow$ CamR_Ca1_B_CaMKII+ PP1a	

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535	reaction_465	CamR_Ca1_C_CaMKIIp binding to PP1a	CamR_Ca1_C_CaMKIIp + PP1a ⟶ CamR_Ca1_C_CaMKIIp_PP1a	
536	reaction_466	CamR_Ca1_C_CaMKIIp dissociating from CamR_Ca1_C_CaMKIIp_PP1a	CamR_Ca1_C_CaMKIIp_PP1a ⟶ CamR_Ca1_C_CaMKIIp+ PP1a	
537	reaction_467	CamR_Ca1_C_CaMKIIp_PP1a dephosphorylation	CamR_Ca1_C_CaMKIIp_PP1a ⟶ CamR_Ca1_C_CaMKII+ PP1a	
538	reaction_468	CamR_Ca1_D_CaMKIIp binding to PP1a	CamR_Ca1_D_CaMKIIp + PP1a ⟶ CamR_Ca1_D_CaMKIIp_PP1a	
539	reaction_469	CamR_Ca1_D_CaMKIIp dissociating from CamR_Ca1_D_CaMKIIp_PP1a	CamR_Ca1_D_CaMKIIp_PP1a ⟶ CamR_Ca1_D_CaMKIIp+ PP1a	
540	reaction_470	CamR_Ca1_D_CaMKIIp_PP1a dephosphorylation	CamR_Ca1_D_CaMKIIp_PP1a ⟶ CamR_Ca1_D_CaMKII+ PP1a	
541	reaction_471	CamR_Ca2_AB_CaMKIIp binding to PP1a	CamR_Ca2_AB_CaMKIIp + PP1a ⟶ CamR_Ca2_AB_CaMKIIp_PP1a	
542	reaction_472	CamR_Ca2_AB_CaMKIIp dissociating from CamR_Ca2_AB_CaMKIIp_PP1a	CamR_Ca2_AB_CaMKIIp_PP1a ⟶ CamR_Ca2_AB_CaMKIIp+ PP1a	
543	reaction_473	CamR_Ca2_AB_CaMKIIp_PP1a dephosphorylation	CamR_Ca2_AB_CaMKIIp_PP1a ⟶ CamR_Ca2_AB_CaMKII+ PP1a	
544	reaction_474	CamR_Ca2_AC_CaMKIIp binding to PP1a	CamR_Ca2_AC_CaMKIIp + PP1a ⟶ CamR_Ca2_AC_CaMKIIp_PP1a	
545	reaction_475	CamR_Ca2_AC_CaMKIIp dissociating from CamR_Ca2_AC_CaMKIIp_PP1a	CamR_Ca2_AC_CaMKIIp_PP1a ⟶ CamR_Ca2_AC_CaMKIIp+ PP1a	
546	reaction_476	CamR_Ca2_AC_CaMKIIp_PP1a dephosphorylation	CamR_Ca2_AC_CaMKIIp_PP1a ⟶ CamR_Ca2_AC_CaMKII+ PP1a	
547	reaction_477	CamR_Ca2_AD_CaMKIIp binding to PP1a	CamR_Ca2_AD_CaMKIIp + PP1a ⟶ CamR_Ca2_AD_CaMKIIp_PP1a	
548	reaction_478	CamR_Ca2_AD_CaMKIIp dissociating from CamR_Ca2_AD_CaMKIIp_PP1a	CamR_Ca2_AD_CaMKIIp_PP1a ⟶ CamR_Ca2_AD_CaMKIIp+ PP1a	

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549	reaction_479	CamR_Ca2_AD_CaMKIIp_PP1a dephosphorylation	CamR_Ca2_AD_CaMKIIp_PP1a ⟶ CamR_Ca2_AD_CaMKII+ PP1a	
550	reaction_480	CamR_Ca2_BC_CaMKIIp binding to PP1a	CamR_Ca2_BC_CaMKIIp + PP1a ⟶ CamR_Ca2_BC_CaMKIIp_PP1a	
551	reaction_481	CamR_Ca2_BC_CaMKIIp dissociating from CamR_Ca2_BC_CaMKIIp_PP1a	CamR_Ca2_BC_CaMKIIp_PP1a ⟶ CamR_Ca2_BC_CaMKIIp+ PP1a	
552	reaction_482	CamR_Ca2_BC_CaMKIIp_PP1a dephosphorylation	CamR_Ca2_BC_CaMKIIp_PP1a ⟶ CamR_Ca2_BC_CaMKII+ PP1a	
553	reaction_483	CamR_Ca2_BD_CaMKIIp binding to PP1a	CamR_Ca2_BD_CaMKIIp + PP1a ⟶ CamR_Ca2_BD_CaMKIIp_PP1a	
554	reaction_484	CamR_Ca2_BD_CaMKIIp dissociating from CamR_Ca2_BD_CaMKIIp_PP1a	CamR_Ca2_BD_CaMKIIp_PP1a ⟶ CamR_Ca2_BD_CaMKIIp+ PP1a	
555	reaction_485	CamR_Ca2_BD_CaMKIIp_PP1a dephosphorylation	CamR_Ca2_BD_CaMKIIp_PP1a ⟶ CamR_Ca2_BD_CaMKII+ PP1a	
556	reaction_486	CamR_Ca2_CD_CaMKIIp binding to PP1a	CamR_Ca2_CD_CaMKIIp + PP1a ⟶ CamR_Ca2_CD_CaMKIIp_PP1a	
557	reaction_487	CamR_Ca2_CD_CaMKIIp dissociating from CamR_Ca2_CD_CaMKIIp_PP1a	CamR_Ca2_CD_CaMKIIp_PP1a ⟶ CamR_Ca2_CD_CaMKIIp+ PP1a	
558	reaction_488	CamR_Ca2_CD_CaMKIIp_PP1a dephosphorylation	CamR_Ca2_CD_CaMKIIp_PP1a ⟶ CamR_Ca2_CD_CaMKII+ PP1a	
559	reaction_489	CamR_Ca3_ABC_CaMKIIp binding to PP1a	CamR_Ca3_ABC_CaMKIIp + PP1a ⟶ CamR_Ca3_ABC_CaMKIIp_PP1a	
560	reaction_490	CamR_Ca3_ABC_CaMKIIp dissociating from CamR_Ca3_ABC_CaMKIIp_PP1a	CamR_Ca3_ABC_CaMKIIp_PP1a ⟶ CamR_Ca3_ABC_CaMKIIp+ PP1a	
561	reaction_491	CamR_Ca3_ABC_CaMKIIp_PP1a dephosphorylation	CamR_Ca3_ABC_CaMKIIp_PP1a ⟶ CamR_Ca3_ABC_CaMKII+ PP1a	
562	reaction_492	CamR_Ca3_ABD_CaMKIIp binding to PP1a	CamR_Ca3_ABD_CaMKIIp + PP1a ⟶ CamR_Ca3_ABD_CaMKIIp_PP1a	

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563	reaction_493	CamR_Ca3_ABD_CaMKIIp dissociating from CamR_Ca3_ABD_CaMKIIp_PP1a	CamR_Ca3_ABD_CaMKIIp_PP1a ⟶ CamR_Ca3_ABD_CaMKIIp+ PP1a	
564	reaction_494	CamR_Ca3_ABD_CaMKIIp_PP1a dephosphorylation	CamR_Ca3_ABD_CaMKIIp_PP1a ⟶ CamR_Ca3_ABD_CaMKII+ PP1a	
565	reaction_495	CamR_Ca3_ACD_CaMKIIp binding to PP1a	CamR_Ca3_ACD_CaMKIIp + PP1a ⟶ CamR_Ca3_ACD_CaMKIIp_PP1a	
566	reaction_496	CamR_Ca3_ACD_CaMKIIp dissociating from CamR_Ca3_ACD_CaMKIIp_PP1a	CamR_Ca3_ACD_CaMKIIp_PP1a ⟶ CamR_Ca3_ACD_CaMKIIp+ PP1a	
567	reaction_497	CamR_Ca3_ACD_CaMKIIp_PP1a dephosphorylation	CamR_Ca3_ACD_CaMKIIp_PP1a ⟶ CamR_Ca3_ACD_CaMKII+ PP1a	
568	reaction_498	CamR_Ca3_BCD_CaMKIIp binding to PP1a	CamR_Ca3_BCD_CaMKIIp + PP1a ⟶ CamR_Ca3_BCD_CaMKIIp_PP1a	
569	reaction_499	CamR_Ca3_BCD_CaMKIIp dissociating from CamR_Ca3_BCD_CaMKIIp_PP1a	CamR_Ca3_BCD_CaMKIIp_PP1a ⟶ CamR_Ca3_BCD_CaMKIIp+ PP1a	
570	reaction_500	CamR_Ca3_BCD_CaMKIIp_PP1a dephosphorylation	CamR_Ca3_BCD_CaMKIIp_PP1a ⟶ CamR_Ca3_BCD_CaMKII+ PP1a	
571	reaction_501	CamR_Ca4_ABCD_CaMKIIp binding to PP1a	CamR_Ca4_ABCD_CaMKIIp + PP1a ⟶ CamR_Ca4_ABCD_CaMKIIp_PP1a	
572	reaction_502	CamR_Ca4_ABCD_CaMKIIp dissociating from CamR_Ca4_ABCD_CaMKIIp_PP1a	CamR_Ca4_ABCD_CaMKIIp_PP1a ⟶ CamR_Ca4_ABCD_CaMKIIp+ PP1a	
573	reaction_503	CamR_Ca4_ABCD_CaMKIIp_PP1a dephosphorylation	CamR_Ca4_ABCD_CaMKIIp_PP1a ⟶ CamR_Ca4_ABCD_CaMKII+ PP1a	
574	PP2B_binding-_to_CamR_Ca2_AC	PP2B binding to CamR_Ca2_AC	CamR_Ca2_AC + PP2B ⟶ CamR_Ca2_AC_PP2B	
575	Ca_binding_to-_CBP_fast	Ca binding to CBP_fast	CBPfast + Ca ⟶ CBPfastCa	

№	Id	Name	Reaction Equation	SBO
576	Ca-_dissociating-_from_CBP_fast-_Ca	Ca dissociating from CBP_fast_Ca	$CBPfastCa \longrightarrow CBPfast + Ca$	
577	Ca_binding_to-_CBP_media	Ca binding to CBP_media	$CBPmedia + Ca \longrightarrow CBPmediaCa$	
578	Ca-_dissociating-_from_CBP-_media_Ca	Ca dissociating from CBP_media_Ca	$CBPmediaCa \longrightarrow CBPmedia + Ca$	
579	Ca_binding_to-_PP2Bi	Ca binding to PP2Bi	$PP2Bi + Ca \longrightarrow PP2Bi\_Ca1$	
580	Ca_binding_to-_PP2Bi_Ca1	Ca binding to PP2Bi_Ca1	$PP2Bi\_Ca1 + Ca \longrightarrow PP2Bi\_Ca2$	
581	Ca_binding_to-_PP2Bi_Ca2	Ca binding to PP2Bi_Ca2	$PP2Bi\_Ca2 + Ca \longrightarrow PP2Bi\_Ca3$	
582	Ca_binding_to-_PP2Bi_Ca3	Ca binding to PP2Bi_Ca3	$PP2Bi\_Ca3 + Ca \longrightarrow PP2B$	
583	Ca-_dissociating-_from_PP2Bi_Ca2	Ca dissociating from PP2Bi_Ca2	$PP2Bi\_Ca2 \longrightarrow PP2Bi\_Ca1 + Ca$	
584	Ca-_dissociating-_from_PP2Bi_Ca3	Ca dissociating from PP2Bi_Ca3	$PP2Bi\_Ca3 \longrightarrow PP2Bi\_Ca2 + Ca$	
585	Ca-_dissociating-_from_PP2B	Ca dissociating from PP2B	$PP2B \longrightarrow PP2Bi\_Ca3 + Ca$	

№	Id	Name	Reaction Equation	SBO
586	Ca-_dissociating-_from_PP2Bi_Ca1	Ca dissociating from PP2Bi_Ca1	$PP2Bi\_Ca1 \longrightarrow PP2Bi + Ca$	
587	reaction_197	Ca_in	$\emptyset \longrightarrow Ca$	

10.1 Reaction `Ca_pump`

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

Name Ca_pump

Reaction equation

$$\text{Ca} \longrightarrow \emptyset \tag{108}$$

Reactant

Table 6: Properties of each reactant.

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_1 = \text{vol}\,(\text{Spine}) \cdot \text{Function\_for\_Ca\_pump}\,([\text{Ca}], \text{km}, \text{vmax}) \tag{109}$$

$$\text{Function\_for\_Ca\_pump}\,([\text{Ca}], \text{km}, \text{vmax}) = \text{vmax} \cdot \frac{[\text{Ca}]}{[\text{Ca}] + \text{km}} \tag{110}$$

$$\text{Function\_for\_Ca\_pump}\,([\text{Ca}], \text{km}, \text{vmax}) = \text{vmax} \cdot \frac{[\text{Ca}]}{[\text{Ca}] + \text{km}} \tag{111}$$

Table 7: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
km	km		10^{-6}		✓
vmax	vmax		0.004		✓

10.2 Reaction `Ca_leak`

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

Name Ca_leak

Reaction equation

$$\emptyset \longrightarrow \text{Ca} \tag{112}$$

Product

Table 8: Properties of each product.

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_2 = \text{vol}\,(\text{Spine}) \cdot \text{function\_1}\,(\text{v}) \tag{113}$$

$$\text{function\_1}\,(\text{v}) = \text{v} \tag{114}$$

$$\text{function\_1}\,(\text{v}) = \text{v} \tag{115}$$

Table 9: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
v	v		$4 \cdot 10^{-5}$		☑

10.3 Reaction `CBPslow_Ca_on`

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

Name Ca binding to CBPslow

Reaction equation

$$\text{CBPslow} + \text{Ca} \longrightarrow \text{CBPslowCa} \tag{116}$$

Reactants

Produced by SBML2LATEX
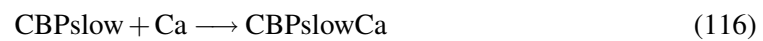
Table 10: Properties of each reactant.

Id	Name	SBO
CBPslow	CBP_slow	
Ca	Ca	

Product

Table 11: Properties of each product.

Id	Name	SBO
CBPslowCa	CBP_slow_Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_3 = \text{vol}\,(\text{Spine}) \cdot \text{K\_CBPslow\_Ca\_on} \cdot [\text{CBPslow}] \cdot [\text{Ca}] \tag{117}$$

10.4 Reaction CBPslow_Ca_off

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

Name Ca dissociating from CBPslow_Ca

Reaction equation

$$\text{CBPslowCa} \longrightarrow \text{CBPslow} + \text{Ca} \tag{118}$$
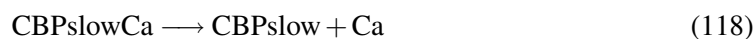
Reactant

Table 12: Properties of each reactant.

Id	Name	SBO
CBPslowCa	CBP_slow_Ca	

Products

Table 13: Properties of each product.

Id	Name	SBO
CBPslow	CBP_slow	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_4 = \text{vol}\,(\text{Spine}) \cdot \text{K\_CBPslow\_Ca\_off} \cdot [\text{CBPslowCa}] \tag{119}$$

10.5 Reaction `CBPvslow_Ca_on`

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

Name Ca binding to CBPvslow

Reaction equation

$$\text{CBPvslow} + \text{Ca} \longrightarrow \text{CBPvslowCa} \tag{120}$$

Reactants

Table 14: Properties of each reactant.

Id	Name	SBO
CBPvslow	CBP_vslow	
Ca	Ca	

Product

Table 15: Properties of each product.

Id	Name	SBO
CBPvslowCa	CBP_vslow_Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_5 = \text{vol}\,(\text{Spine}) \cdot \text{K\_CBPvslow\_Ca\_on} \cdot [\text{CBPvslow}] \cdot [\text{Ca}] \tag{121}$$

10.6 Reaction `CBPvslow_Ca_off`

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

Name Ca dissociating from CBPvslow_Ca

$$CBPvslowCa \longrightarrow CBPvslow + Ca \tag{122}$$
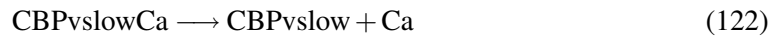
Reactant

Table 16: Properties of each reactant.

Id	Name	SBO
CBPvslowCa	CBP_vslow_Ca	

Products

Table 17: Properties of each product.

Id	Name	SBO
CBPvslow	CBP_vslow	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_6 = \text{vol}\,(\text{Spine}) \cdot \text{K\_CBPvslow\_Ca\_off} \cdot [\text{CBPvslowCa}] \tag{123}$$

10.7 Reaction `reaction_0`

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

Name Ca binding to CamR site A

Reaction equation

$$CamR + Ca \longrightarrow CamR\_Ca1\_A \tag{124}$$

Reactants

Table 18: Properties of each reactant.

Id	Name	SBO
CamR	CamR	

Id	Name	SBO
Ca	Ca	

Product

Table 19: Properties of each product.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	

Kinetic Law

Derived unit contains undeclared units

$$v_7 = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR}] \cdot [\text{Ca}] \tag{125}$$

10.8 Reaction reaction_1

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

Name Ca binding to CamR site B

Reaction equation

$$\text{CamR} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_B} \tag{126}$$

Reactants

Table 20: Properties of each reactant.

Id	Name	SBO
CamR	CamR	
Ca	Ca	

Product

Table 21: Properties of each product.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	

Kinetic Law

Derived unit contains undeclared units

$$v_8 = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR}] \cdot [\text{Ca}] \tag{127}$$

10.9 Reaction `reaction_2`

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

Name Ca binding to CamR site C

Reaction equation

$$\text{CamR} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_C} \tag{128}$$

Reactants

Table 22: Properties of each reactant.

Id	Name	SBO
CamR	CamR	
Ca	Ca	

Product

Table 23: Properties of each product.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	

Kinetic Law

Derived unit contains undeclared units

$$v_9 = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR}] \cdot [\text{Ca}] \tag{129}$$

10.10 Reaction `reaction_3`

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

Name Ca binding to CamR site D

Reaction equation

$$CamR + Ca \longrightarrow CamR\_Ca1\_D \tag{130}$$

Reactants

Table 24: Properties of each reactant.

Id	Name	SBO
CamR	CamR	
Ca	Ca	

Product

Table 25: Properties of each product.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	

Kinetic Law

Derived unit contains undeclared units

$$v_{10} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR}] \cdot [\text{Ca}] \tag{131}$$

10.11 Reaction reaction_4

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

Name Ca dissociating from CamR_Ca1_A site A

Reaction equation

$$CamR\_Ca1\_A \longrightarrow CamR + Ca \tag{132}$$

Reactant

Table 26: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	

Products

Table 27: Properties of each product.

Id	Name	SBO
CamR	CamR	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{11} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca1\_A}] \tag{133}$$

10.12 Reaction reaction_5

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

Name Ca dissociating from CamR_Ca1_B site B

Reaction equation

$$\text{CamR\_Ca1\_B} \longrightarrow \text{CamR} + \text{Ca} \tag{134}$$
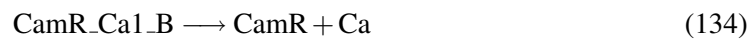
Reactant

Table 28: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	

Products

Table 29: Properties of each product.

Id	Name	SBO
CamR	CamR	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{12} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca1\_B}] \qquad (135)$$

10.13 Reaction `reaction_6`

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

Name Ca dissociating from CamR_Ca1_C site C

Reaction equation

$$\text{CamR\_Ca1\_C} \longrightarrow \text{CamR} + \text{Ca} \qquad (136)$$
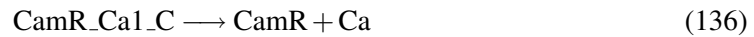
Reactant

Table 30: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	

Products

Table 31: Properties of each product.

Id	Name	SBO
CamR	CamR	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{13} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca1\_C}] \qquad (137)$$

10.14 Reaction `reaction_7`

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

Name Ca dissociating from CamR_Ca1_D site D

Reaction equation

$$\text{CamR\_Ca1\_D} \longrightarrow \text{CamR} + \text{Ca} \qquad (138)$$

Reactant

Produced by SBML2LATEX
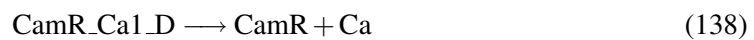
Table 32: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	

Products

Table 33: Properties of each product.

Id	Name	SBO
CamR	CamR	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{14} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca1\_D}] \tag{139}$$

10.15 Reaction `reaction_8`

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

Name Ca binding to CamR_Ca1_A site B

Reaction equation

$$\text{CamR\_Ca1\_A} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AB} \tag{140}$$
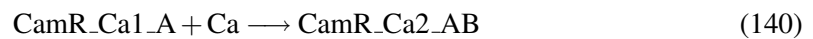
Reactants

Table 34: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
Ca	Ca	

Product

Table 35: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{15} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A}] \cdot [\text{Ca}] \tag{141}$$

10.16 Reaction reaction_9

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

Name Ca binding to CamR_Ca1_A site C

Reaction equation

$$\text{CamR\_Ca1\_A} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AC} \tag{142}$$
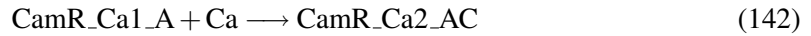
Reactants

Table 36: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
Ca	Ca	

Product

Table 37: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{16} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A}] \cdot [\text{Ca}] \tag{143}$$

10.17 Reaction `reaction_10`

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

Name Ca binding to CamR_Ca1_A site D

Reaction equation

$$\text{CamR\_Ca1\_A} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AD} \tag{144}$$
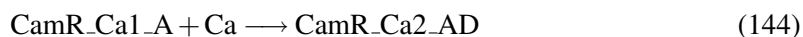
Reactants

Table 38: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
Ca	Ca	

Product

Table 39: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{17} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A}] \cdot [\text{Ca}] \tag{145}$$

10.18 Reaction `reaction_11`

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

Name Ca binding to CamR_Ca1_B site A

Reaction equation

$$\text{CamR\_Ca1\_B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AB} \tag{146}$$
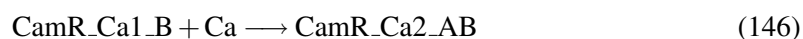
Reactants

Table 40: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
Ca	Ca	

Product

Table 41: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{18} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B}] \cdot [\text{Ca}] \tag{147}$$

10.19 Reaction `reaction_12`

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

Name Ca binding to CamR_Ca1_B site C

Reaction equation

$$\text{CamR\_Ca1\_B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BC} \tag{148}$$
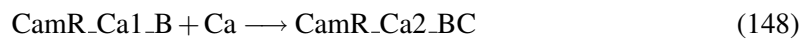
Reactants

Table 42: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
Ca	Ca	

Product

Table 43: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{19} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B}] \cdot [\text{Ca}] \tag{149}$$

10.20 Reaction reaction_13

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

Name Ca binding to CamR_Ca1_B site D

Reaction equation

$$\text{CamR\_Ca1\_B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BD} \tag{150}$$

Reactants

Table 44: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
Ca	Ca	

Product

Table 45: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{20} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B}] \cdot [\text{Ca}] \tag{151}$$

10.21 Reaction `reaction_14`

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

Name Ca binding to CamR_Ca1_C site A

Reaction equation

$$CamR\_Ca1\_C + Ca \longrightarrow CamR\_Ca2\_AC \tag{152}$$
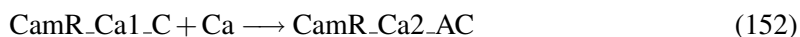
Reactants

Table 46: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
Ca	Ca	

Product

Table 47: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{21} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamR\_Ca1\_C}] \cdot [\mathrm{Ca}] \tag{153}$$

10.22 Reaction `reaction_15`

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

Name Ca binding to CamR_Ca1_C site B

Reaction equation

$$CamR\_Ca1\_C + Ca \longrightarrow CamR\_Ca2\_BC \tag{154}$$
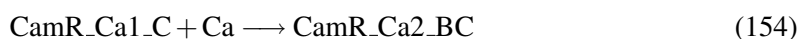
Reactants

Table 48: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
Ca	Ca	

Product

Table 49: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{22} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_C}] \cdot [\text{Ca}] \tag{155}$$

10.23 Reaction `reaction_16`

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

Name Ca binding to CamR_Ca1_C site D

Reaction equation

$$\text{CamR\_Ca1\_C} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_CD} \tag{156}$$
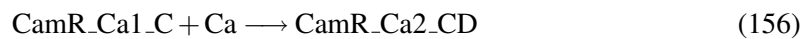
Reactants

Table 50: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
Ca	Ca	

Product

Table 51: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{23} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_C}] \cdot [\text{Ca}] \tag{157}$$

10.24 Reaction reaction_17

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

Name Ca binding to CamR_Ca1_D site A

Reaction equation

$$\text{CamR\_Ca1\_D} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AD} \tag{158}$$
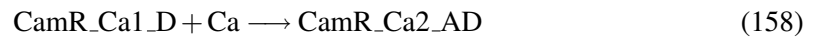
Reactants

Table 52: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
Ca	Ca	

Product

Table 53: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{24} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D}] \cdot [\text{Ca}] \tag{159}$$

10.25 Reaction `reaction_18`

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

Name Ca binding to CamR_Ca1_D site B

Reaction equation

$$CamR\_Ca1\_D + Ca \longrightarrow CamR\_Ca2\_BD \tag{160}$$
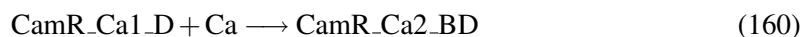
Reactants

Table 54: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
Ca	Ca	

Product

Table 55: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{25} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D}] \cdot [\text{Ca}] \tag{161}$$

10.26 Reaction `reaction_19`

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

Name Ca binding to CamR_Ca1_D site C

Reaction equation

$$CamR\_Ca1\_D + Ca \longrightarrow CamR\_Ca2\_CD \tag{162}$$
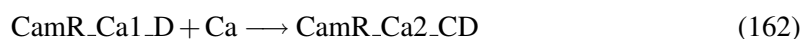
Reactants

Table 56: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
Ca	Ca	

Product

Table 57: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{26} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D}] \cdot [\text{Ca}] \tag{163}$$

10.27 Reaction `reaction_20`

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

Name Ca dissociating from CamR_Ca2_AB site B

Reaction equation

$$\text{CamR\_Ca2\_AB} \longrightarrow \text{CamR\_Ca1\_A} + \text{Ca} \tag{164}$$

Reactant

Table 58: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	

Products

Table 59: Properties of each product.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{27} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca2\_AB}] \qquad (165)$$

10.28 Reaction reaction_21

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

Name Ca dissociating from CamR_Ca2_AC site C

Reaction equation

$$\text{CamR\_Ca2\_AC} \longrightarrow \text{CamR\_Ca1\_A} + \text{Ca} \qquad (166)$$

Reactant

Table 60: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	

Products

Table 61: Properties of each product.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{28} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_AC}] \qquad (167)$$

10.29 Reaction reaction_22

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

Name Ca dissociating from CamR_Ca2_AD site D

Reaction equation

$$CamR\_Ca2\_AD \longrightarrow CamR\_Ca1\_A + Ca \qquad (168)$$

Reactant

Table 62: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	

Products

Table 63: Properties of each product.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{29} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_AD}] \qquad (169)$$

10.30 Reaction `reaction_23`

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

Name Ca dissociating from CamR_Ca2_AB site A

Reaction equation

$$CamR\_Ca2\_AB \longrightarrow CamR\_Ca1\_B + Ca \qquad (170)$$
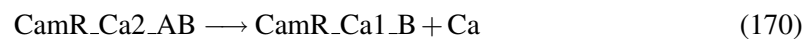
Reactant

Table 64: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	

Products

Table 65: Properties of each product.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{30} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AB}] \qquad (171)$$

10.31 Reaction `reaction_24`

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

Name Ca dissociating from CamR_Ca2_BC site C

Reaction equation

$$\text{CamR\_Ca2\_BC} \longrightarrow \text{CamR\_Ca1\_B} + \text{Ca} \qquad (172)$$
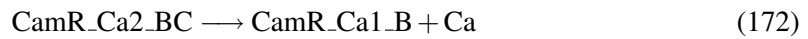
Reactant

Table 66: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	

Products

Table 67: Properties of each product.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{31} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_BC}] \tag{173}$$

10.32 Reaction `reaction_25`

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

Name Ca dissociating from CamR_Ca2_BD site D

Reaction equation

$$\text{CamR\_Ca2\_BD} \longrightarrow \text{CamR\_Ca1\_B} + \text{Ca} \tag{174}$$
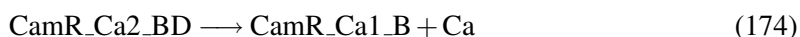
Reactant

Table 68: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	

Products

Table 69: Properties of each product.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{32} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_BD}] \tag{175}$$

10.33 Reaction `reaction_26`

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

Name Ca dissociating from CamR_Ca2_AC site A

Reaction equation

$$\text{CamR\_Ca2\_AC} \longrightarrow \text{CamR\_Ca1\_C} + \text{Ca} \tag{176}$$
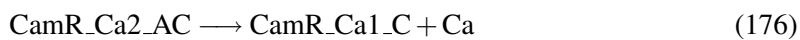
Reactant

Table 70: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	

Products

Table 71: Properties of each product.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{33} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AC}] \tag{177}$$

10.34 Reaction reaction_27

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

Name Ca dissociating from CamR_Ca2_BC site B

Reaction equation

$$\text{CamR\_Ca2\_BC} \longrightarrow \text{CamR\_Ca1\_C} + \text{Ca} \tag{178}$$
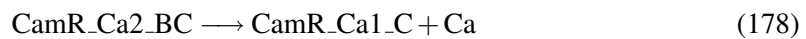
Reactant

Table 72: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	

Products

Table 73: Properties of each product.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{34} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_B\_off} \cdot [\mathrm{CamR\_Ca2\_BC}] \tag{179}$$

10.35 Reaction `reaction_28`

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

Name Ca dissociating from CamR_Ca2_CD site D

Reaction equation

$$\mathrm{CamR\_Ca2\_CD} \longrightarrow \mathrm{CamR\_Ca1\_C} + \mathrm{Ca} \tag{180}$$
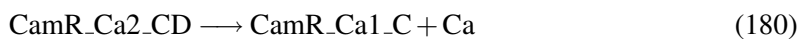
Reactant

Table 74: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	

Products

Table 75: Properties of each product.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{35} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_D\_off} \cdot [\mathrm{CamR\_Ca2\_CD}] \tag{181}$$

10.36 Reaction `reaction_29`

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

Name Ca dissociating from CamR_Ca2_AD site A

Reaction equation

$$\text{CamR\_Ca2\_AD} \longrightarrow \text{CamR\_Ca1\_D} + \text{Ca} \qquad (182)$$
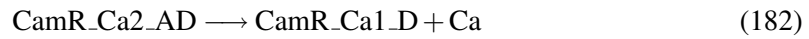
Reactant

Table 76: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	

Products

Table 77: Properties of each product.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{36} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AD}] \qquad (183)$$

10.37 Reaction `reaction_30`

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

Name Ca dissociating from CamR_Ca2_BD site B

Reaction equation

$$\text{CamR\_Ca2\_BD} \longrightarrow \text{CamR\_Ca1\_D} + \text{Ca} \qquad (184)$$
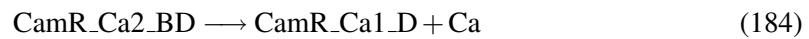
Reactant

Table 78: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	

Products

Table 79: Properties of each product.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{37} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca2\_BD}] \qquad (185)$$

10.38 Reaction reaction_31

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

Name Ca dissociating from CamR_Ca2_CD site C

Reaction equation

$$\text{CamR\_Ca2\_CD} \longrightarrow \text{CamR\_Ca1\_D} + \text{Ca} \qquad (186)$$

Reactant

Table 80: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	

Products

Table 81: Properties of each product.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{38} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_CD}] \qquad (187)$$

10.39 Reaction `reaction_32`

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

Name Ca binding to CamR_Ca2_AB site C

Reaction equation

$$\text{CamR\_Ca2\_AB} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC} \qquad (188)$$

Reactants

Table 82: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	
Ca	Ca	

Product

Table 83: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{39} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AB}] \cdot [\text{Ca}] \qquad (189)$$

10.40 Reaction `reaction_33`

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

Name Ca binding to CamR_Ca2_AB site D

Reaction equation

$$\text{CamR\_Ca2\_AB} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD} \qquad (190)$$

Reactants

Table 84: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	
Ca	Ca	

Product

Table 85: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	

Kinetic Law

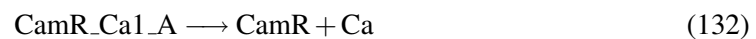**Derived unit** contains undeclared units

$$v_{40} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AB}] \cdot [\text{Ca}] \qquad (191)$$

10.41 Reaction `reaction_34`

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

Name Ca binding to CamR_Ca2_AC site B

Reaction equation

$$\text{CamR\_Ca2\_AC} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC} \qquad (192)$$

Reactants

Table 86: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
Ca	Ca	

Product

Table 87: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{41} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AC}] \cdot [\text{Ca}] \tag{193}$$

10.42 Reaction reaction_35

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

Name Ca binding to CamR_Ca2_AC site D

Reaction equation

$$\text{CamR\_Ca2\_AC} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ACD} \tag{194}$$

Reactants

Table 88: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
Ca	Ca	

Product

Table 89: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{42} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AC}] \cdot [\text{Ca}] \tag{195}$$

10.43 Reaction `reaction_36`

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

Name Ca binding to CamR_Ca2_AD site B

Reaction equation

$$CamR\_Ca2\_AD + Ca \longrightarrow CamR\_Ca3\_ABD \tag{196}$$

Reactants

Table 90: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
Ca	Ca	

Product

Table 91: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{43} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_Cam\_Ca\_on \cdot [CamR\_Ca2\_AD] \cdot [Ca] \tag{197}$$

10.44 Reaction `reaction_37`

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

Name Ca binding to CamR_Ca2_AD site C

Reaction equation

$$CamR\_Ca2\_AD + Ca \longrightarrow CamR\_Ca3\_ACD \tag{198}$$
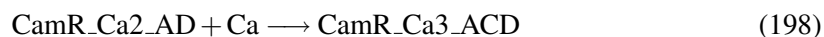
Reactants

Table 92: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
Ca	Ca	

Product

Table 93: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{44} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AD}] \cdot [\text{Ca}] \tag{199}$$

10.45 Reaction reaction_38

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

Name Ca binding to CamR_Ca2_BC site A

Reaction equation

$$\text{CamR\_Ca2\_BC} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC} \tag{200}$$

Reactants

Table 94: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
Ca	Ca	

Product

Table 95: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{45} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BC}] \cdot [\text{Ca}] \tag{201}$$

10.46 Reaction reaction_39

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

Name Ca binding to CamR_Ca2_BC site D

Reaction equation

$$\text{CamR\_Ca2\_BC} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD} \tag{202}$$

Reactants

Table 96: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
Ca	Ca	

Product

Table 97: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{46} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BC}] \cdot [\text{Ca}] \tag{203}$$

10.47 Reaction `reaction_40`

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

Name Ca binding to CamR_Ca2_BD site A

Reaction equation

$$\text{CamR\_Ca2\_BD} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD} \tag{204}$$

Reactants

Table 98: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
Ca	Ca	

Product

Table 99: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{47} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BD}] \cdot [\text{Ca}] \tag{205}$$

10.48 Reaction `reaction_41`

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

Name Ca binding to CamR_Ca2_BD site C

Reaction equation

$$\text{CamR\_Ca2\_BD} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD} \tag{206}$$

Reactants

Table 100: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
Ca	Ca	

Product

Table 101: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{48} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BD}] \cdot [\text{Ca}] \tag{207}$$

10.49 Reaction `reaction_42`

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

Name Ca binding to CamR_Ca2_CD site A

Reaction equation

$$\text{CamR\_Ca2\_CD} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ACD} \tag{208}$$
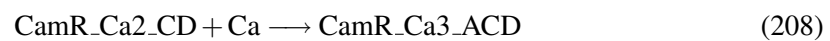
Reactants

Table 102: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	
Ca	Ca	

Product

Table 103: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{49} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_CD}] \cdot [\text{Ca}] \tag{209}$$

10.50 Reaction reaction_43

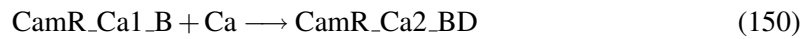This is an irreversible reaction of two reactants forming one product.

Name Ca binding to CamR_Ca2_CD site B

Reaction equation

$$\text{CamR\_Ca2\_CD} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD} \tag{210}$$

Reactants

Table 104: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	
Ca	Ca	

Product

Table 105: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{50} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_CD}] \cdot [\text{Ca}] \tag{211}$$

10.51 Reaction `reaction_44`

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

Name Ca dissociating from CamR_Ca3_ABC site A

Reaction equation

$$\text{CamR\_Ca3\_ABC} \longrightarrow \text{CamR\_Ca2\_BC} + \text{Ca} \tag{212}$$
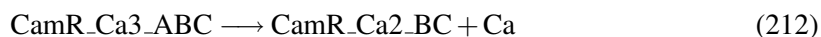
Reactant

Table 106: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Products

Table 107: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{51} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ABC}] \tag{213}$$

10.52 Reaction `reaction_45`

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

Name Ca dissociating from CamR_Ca3_ABC site B

Reaction equation

$$\text{CamR\_Ca3\_ABC} \longrightarrow \text{CamR\_Ca2\_AC} + \text{Ca} \tag{214}$$
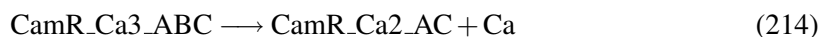
Reactant

Table 108: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Products

Table 109: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{52} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca3\_ABC}] \qquad (215)$$

10.53 Reaction `reaction_46`

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

Name Ca dissociating from CamR_Ca3_ABC site C

Reaction equation

$$\text{CamR\_Ca3\_ABC} \longrightarrow \text{CamR\_Ca2\_AB} + \text{Ca} \qquad (216)$$
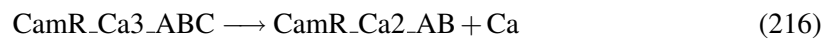
Reactant

Table 110: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Products

Table 111: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{53} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_C\_off} \cdot [\mathrm{CamR\_Ca3\_ABC}] \tag{217}$$

10.54 Reaction `reaction_47`

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

Name Ca dissociating from CamR_Ca3_ABD site A

Reaction equation

$$\mathrm{CamR\_Ca3\_ABD} \longrightarrow \mathrm{CamR\_Ca2\_BD} + \mathrm{Ca} \tag{218}$$
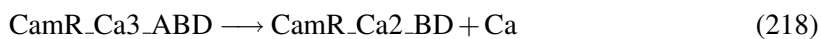
Reactant

Table 112: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	

Products

Table 113: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{54} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_A\_off} \cdot [\mathrm{CamR\_Ca3\_ABD}] \tag{219}$$

10.55 Reaction `reaction_48`

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

Name Ca dissociating from CamR_Ca3_ABD site B

Reaction equation

$$CamR\_Ca3\_ABD \longrightarrow CamR\_Ca2\_AD + Ca \qquad (220)$$
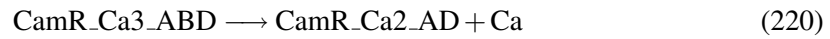
Reactant

Table 114: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	

Products

Table 115: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{55} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca3\_ABD}] \qquad (221)$$

10.56 Reaction `reaction_49`

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

Name Ca dissociating from CamR_Ca3_ABD site D

Reaction equation

$$CamR\_Ca3\_ABD \longrightarrow CamR\_Ca2\_AB + Ca \qquad (222)$$
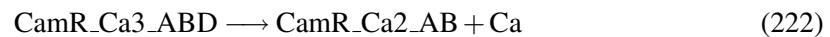
Reactant

Table 116: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	

Products

Table 117: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{56} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca3\_ABD}] \tag{223}$$

10.57 Reaction reaction_50

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

Name Ca dissociating from CamR_Ca3_ACD site A

Reaction equation

$$\text{CamR\_Ca3\_ACD} \longrightarrow \text{CamR\_Ca2\_CD} + \text{Ca} \tag{224}$$
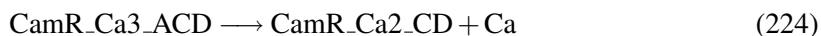
Reactant

Table 118: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	

Products

Table 119: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

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$$v_{57} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ACD}] \qquad (225)$$

10.58 Reaction `reaction_51`

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

Name Ca dissociating from CamR_Ca3_ACD site C

Reaction equation

$$\text{CamR\_Ca3\_ACD} \longrightarrow \text{CamR\_Ca2\_AD} + \text{Ca} \qquad (226)$$

Reactant

Table 120: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	

Products

Table 121: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{58} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_ACD}] \qquad (227)$$

10.59 Reaction `reaction_52`

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

Name Ca dissociating from CamR_Ca3_ACD site D

Reaction equation

$$\text{CamR\_Ca3\_ACD} \longrightarrow \text{CamR\_Ca2\_AC} + \text{Ca} \qquad (228)$$
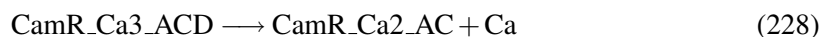
Reactant

Table 122: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	

Products

Table 123: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{59} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca3\_ACD}] \tag{229}$$

10.60 Reaction reaction_53

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

Name Ca dissociating from CamR_Ca3_BCD site B

Reaction equation

$$\text{CamR\_Ca3\_BCD} \longrightarrow \text{CamR\_Ca2\_CD} + \text{Ca} \tag{230}$$
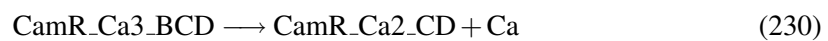
Reactant

Table 124: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	

Products

Table 125: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{60} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca3\_BCD}] \tag{231}$$

10.61 Reaction reaction_54

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

Name Ca dissociating from CamR_Ca3_BCD site C

Reaction equation

$$\text{CamR\_Ca3\_BCD} \longrightarrow \text{CamR\_Ca2\_BD} + \text{Ca} \tag{232}$$
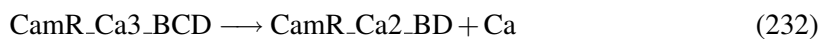
Reactant

Table 126: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	

Products

Table 127: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{61} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_BCD}] \tag{233}$$

10.62 Reaction reaction_55

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

Name Ca dissociating from CamR_Ca3_BCD site D

Reaction equation

$$CamR\_Ca3\_BCD \longrightarrow CamR\_Ca2\_BC + Ca \qquad (234)$$
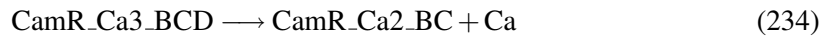
Reactant

Table 128: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	

Products

Table 129: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{62} = \text{vol}\,(\text{Spine}) \cdot K\_CamR\_Ca\_D\_off \cdot [CamR\_Ca3\_BCD] \qquad (235)$$

10.63 Reaction reaction_56

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

Name Ca binding to CamR_Ca3_ABC site D

Reaction equation

$$CamR\_Ca3\_ABC + Ca \longrightarrow CamR\_Ca4\_ABCD \qquad (236)$$

Reactants

Table 130: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Id	Name	SBO
Ca	Ca	

Product

Table 131: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{63} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ABC}] \cdot [\text{Ca}] \tag{237}$$

10.64 Reaction `reaction_57`

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

Name Ca binding to CamR_Ca3_ABD site C

Reaction equation

$$\text{CamR\_Ca3\_ABD} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD} \tag{238}$$

Reactants

Table 132: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	
Ca	Ca	

Product

Table 133: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{64} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ABD}] \cdot [\text{Ca}] \tag{239}$$

10.65 Reaction `reaction_58`

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

Name Ca binding to CamR_Ca3_ACD site B

Reaction equation

$$\text{CamR\_Ca3\_ACD} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD} \tag{240}$$

Reactants

Table 134: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	
Ca	Ca	

Product

Table 135: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{65} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ACD}] \cdot [\text{Ca}] \tag{241}$$

10.66 Reaction `reaction_59`

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

Name Ca binding to CamR_Ca3_BCD site A

Reaction equation

$$CamR\_Ca3\_BCD + Ca \longrightarrow CamR\_Ca4\_ABCD \tag{242}$$

Reactants

Table 136: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	
Ca	Ca	

Product

Table 137: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{66} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_Cam\_Ca\_on \cdot [CamR\_Ca3\_BCD] \cdot [Ca] \tag{243}$$

10.67 Reaction `reaction_60`

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

Name Ca dissociating from CamR_Ca4_ABCD site D

Reaction equation

$$CamR\_Ca4\_ABCD \longrightarrow CamR\_Ca3\_ABC + Ca \tag{244}$$
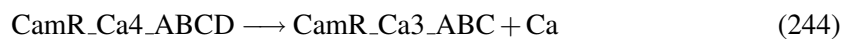
Reactant

Table 138: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Products

Table 139: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{67} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca4\_ABCD}] \tag{245}$$

10.68 Reaction reaction_61

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

Name Ca dissociating from CamR_Ca4_ABCD site C

Reaction equation

$$\text{CamR\_Ca4\_ABCD} \longrightarrow \text{CamR\_Ca3\_ABD} + \text{Ca} \tag{246}$$
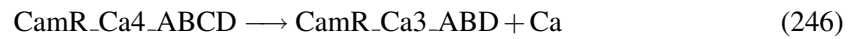
Reactant

Table 140: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Products

Table 141: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{68} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca4\_ABCD}] \qquad (247)$$

10.69 Reaction `reaction_62`

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

Name Ca dissociating from CamR_Ca4_ABCD site B

Reaction equation

$$\text{CamR\_Ca4\_ABCD} \longrightarrow \text{CamR\_Ca3\_ACD} + \text{Ca} \qquad (248)$$
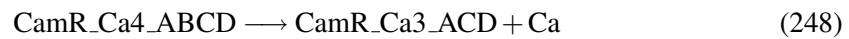
Reactant

Table 142: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Products

Table 143: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{69} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca4\_ABCD}] \qquad (249)$$

10.70 Reaction `reaction_63`

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

Name Ca dissociating from CamR_Ca4_ABCD site A

Reaction equation

$$\text{CamR\_Ca4\_ABCD} \longrightarrow \text{CamR\_Ca3\_BCD} + \text{Ca} \qquad (250)$$
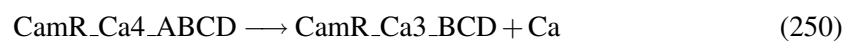
Reactant

Table 144: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Products

Table 145: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{70} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot \left[\text{CamR\_Ca4\_ABCD}\right] \tag{251}$$

10.71 Reaction `reaction_64`

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

Name Ca binding to camT site A

Reaction equation

$$\text{CamT} + \text{Ca} \longrightarrow \text{CamT\_Ca1\_A} \tag{252}$$

Reactants

Table 146: Properties of each reactant.

Id	Name	SBO
CamT	CamT	
Ca	Ca	

Product

Table 147: Properties of each product.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	

Kinetic Law

Derived unit contains undeclared units

$$v_{71} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT}] \cdot [\text{Ca}] \qquad (253)$$

10.72 Reaction reaction_65

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

Name Ca binding to camT site B

Reaction equation

$$\text{CamT} + \text{Ca} \longrightarrow \text{CamT\_Ca1\_B} \qquad (254)$$
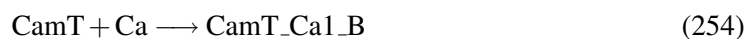
Reactants

Table 148: Properties of each reactant.

Id	Name	SBO
CamT	CamT	
Ca	Ca	

Product

Table 149: Properties of each product.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	

Kinetic Law

Derived unit contains undeclared units
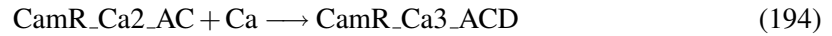
$$v_{72} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT}] \cdot [\text{Ca}] \qquad (255)$$

10.73 Reaction reaction_66

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

Name Ca binding to camT site C

Reaction equation

$$CamT + Ca \longrightarrow CamT\_Ca1\_C \tag{256}$$

Reactants

Table 150: Properties of each reactant.

Id	Name	SBO
CamT	CamT	
Ca	Ca	

Product

Table 151: Properties of each product.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	

Kinetic Law

Derived unit contains undeclared units

$$v_{73} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT}] \cdot [\text{Ca}] \tag{257}$$

10.74 Reaction reaction_67

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

Name Ca binding to camT site D

Reaction equation

$$CamT + Ca \longrightarrow CamT\_Ca1\_D \tag{258}$$

Reactants

Table 152: Properties of each reactant.

Id	Name	SBO
CamT	CamT	
Ca	Ca	

Product

Table 153: Properties of each product.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	

Kinetic Law

Derived unit contains undeclared units

$$v_{74} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT}] \cdot [\text{Ca}] \tag{259}$$

10.75 Reaction `reaction_68`

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

Name Ca dissociating from camT_ca1_A site A

Reaction equation

$$\text{CamT\_Ca1\_A} \longrightarrow \text{CamT} + \text{Ca} \tag{260}$$
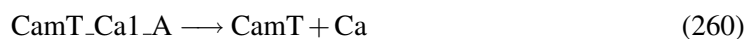
Reactant

Table 154: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	

Products

Table 155: Properties of each product.

Id	Name	SBO
CamT	CamT	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{75} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_A\_off} \cdot [\text{CamT\_Ca1\_A}] \tag{261}$$

10.76 Reaction `reaction_69`

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

Name Ca dissociating from camT_ca1_B site B

Reaction equation

$$\text{CamT\_Ca1\_B} \longrightarrow \text{CamT} + \text{Ca} \tag{262}$$
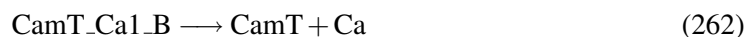
Reactant

Table 156: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	

Products

Table 157: Properties of each product.

Id	Name	SBO
CamT	CamT	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{76} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_B\_off} \cdot [\text{CamT\_Ca1\_B}] \tag{263}$$

10.77 Reaction `reaction_70`

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

Name Ca dissociating from camT_ca1_C site C

Reaction equation

$$CamT\_Ca1\_C \longrightarrow CamT + Ca \tag{264}$$
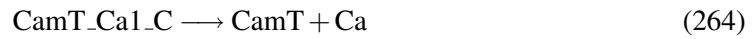
Reactant

Table 158: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	

Products

Table 159: Properties of each product.

Id	Name	SBO
CamT	CamT	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{77} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_C\_off} \cdot [\text{CamT\_Ca1\_C}] \tag{265}$$

10.78 Reaction reaction_71

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

Name Ca dissociating from camT_ca1_D site D

Reaction equation

$$CamT\_Ca1\_D \longrightarrow CamT + Ca \tag{266}$$
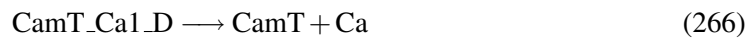
Reactant

Table 160: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	

Products

Table 161: Properties of each product.

Id	Name	SBO
CamT	CamT	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{78} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamT\_Ca\_D\_off} \cdot \left[\text{CamT\_Ca1\_D}\right] \tag{267}$$

10.79 Reaction `reaction_72`

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

Name Ca binding to camT_ca1_A site B

Reaction equation

$$\text{CamT\_Ca1\_A} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_AB} \tag{268}$$
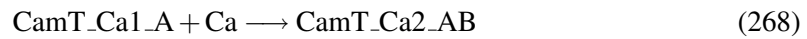
Reactants

Table 162: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	
Ca	Ca	

Product

Table 163: Properties of each product.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{79} = \text{vol} \, (\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_A}] \cdot [\text{Ca}] \tag{269}$$

10.80 Reaction `reaction_73`

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

Name Ca binding to camT_ca1_A site C

Reaction equation

$$\text{CamT\_Ca1\_A} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_AC} \tag{270}$$
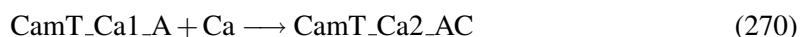
Reactants

Table 164: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	
Ca	Ca	

Product

Table 165: Properties of each product.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{80} = \text{vol} \, (\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_A}] \cdot [\text{Ca}] \tag{271}$$

10.81 Reaction `reaction_74`

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

Name Ca binding to camT_ca1_A site D

Reaction equation

$$\text{CamT\_Ca1\_A} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_AD} \tag{272}$$
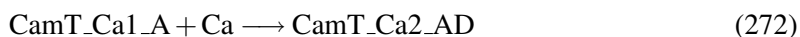
Reactants

Table 166: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	
Ca	Ca	

Product

Table 167: Properties of each product.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{81} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_A}] \cdot [\text{Ca}] \tag{273}$$

10.82 Reaction reaction_75

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

Name Ca binding to camT_ca1_B site A

Reaction equation

$$\text{CamT\_Ca1\_B} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_AB} \tag{274}$$
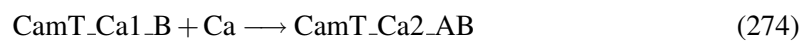
Reactants

Table 168: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	
Ca	Ca	

Product

Table 169: Properties of each product.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{82} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_B}] \cdot [\text{Ca}] \tag{275}$$

10.83 Reaction reaction_76

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

Name Ca binding to camT_ca1_B site C

Reaction equation

$$\text{CamT\_Ca1\_B} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_BC} \tag{276}$$
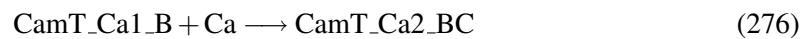
Reactants

Table 170: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	
Ca	Ca	

Product

Table 171: Properties of each product.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{83} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_B}] \cdot [\text{Ca}] \tag{277}$$

10.84 Reaction `reaction_77`

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

Name Ca binding to camT_ca1_B site D

Reaction equation

$$CamT\_Ca1\_B + Ca \longrightarrow CamT\_Ca2\_BD \tag{278}$$
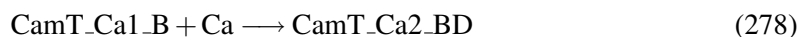
Reactants

Table 172: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	
Ca	Ca	

Product

Table 173: Properties of each product.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{84} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_B}] \cdot [\text{Ca}] \tag{279}$$

10.85 Reaction `reaction_78`

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

Name Ca binding to camT_ca1_C site A

Reaction equation

$$CamT\_Ca1\_C + Ca \longrightarrow CamT\_Ca2\_AC \tag{280}$$
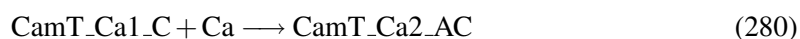
Reactants

Table 174: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	
Ca	Ca	

Product

Table 175: Properties of each product.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{85} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamT\_Ca1\_C}] \cdot [\mathrm{Ca}] \tag{281}$$

10.86 Reaction reaction_79

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

Name Ca binding to camT_ca1_C site B

Reaction equation

$$\mathrm{CamT\_Ca1\_C} + \mathrm{Ca} \longrightarrow \mathrm{CamT\_Ca2\_BC} \tag{282}$$
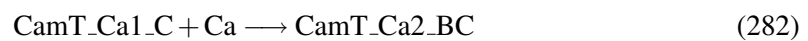
Reactants

Table 176: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	
Ca	Ca	

Product

Table 177: Properties of each product.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{86} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_C}] \cdot [\text{Ca}] \tag{283}$$

10.87 Reaction reaction_80

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

Name Ca binding to CamT_ca1_C site D

Reaction equation

$$\text{CamT\_Ca1\_C} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_CD} \tag{284}$$
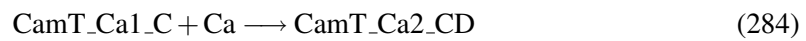
Reactants

Table 178: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	
Ca	Ca	

Product

Table 179: Properties of each product.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{87} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_C}] \cdot [\text{Ca}] \tag{285}$$

10.88 Reaction `reaction_81`

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

Name Ca binding to CamT_ca1_D site A

Reaction equation

$$\text{CamT\_Ca1\_D} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_AD} \tag{286}$$
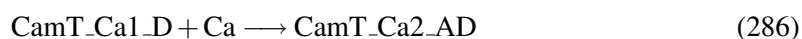
Reactants

Table 180: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	
Ca	Ca	

Product

Table 181: Properties of each product.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{88} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_D}] \cdot [\text{Ca}] \tag{287}$$

10.89 Reaction `reaction_82`

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

Name Ca binding to CamT_ca1_D site B

Reaction equation

$$\text{CamT\_Ca1\_D} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_BD} \tag{288}$$
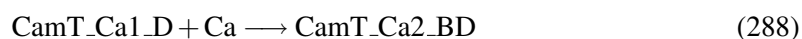
Reactants

Table 182: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	
Ca	Ca	

Product

Table 183: Properties of each product.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{89} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_D}] \cdot [\text{Ca}] \tag{289}$$

10.90 Reaction reaction_83

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

Name Ca binding to CamT_ca1_D site C

Reaction equation

$$\text{CamT\_Ca1\_D} + \text{Ca} \longrightarrow \text{CamT\_Ca2\_CD} \tag{290}$$
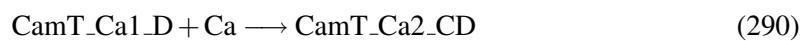
Reactants

Table 184: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	
Ca	Ca	

Product

Table 185: Properties of each product.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{90} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca1\_D}] \cdot [\text{Ca}] \tag{291}$$

10.91 Reaction `reaction_84`

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

Name Ca dissociating from CamT_ca2_AB site A

Reaction equation

$$\text{CamT\_Ca2\_AB} \longrightarrow \text{CamT\_Ca1\_B} + \text{Ca} \tag{292}$$
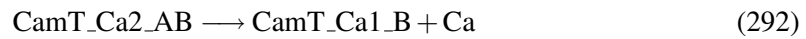
Reactant

Table 186: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	

Products

Table 187: Properties of each product.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{91} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_A\_off} \cdot [\text{CamT\_Ca2\_AB}] \tag{293}$$

10.92 Reaction `reaction_85`

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

Name Ca dissociating from CamT_ca2_AB site B

Reaction equation

$$CamT\_Ca2\_AB \longrightarrow CamT\_Ca1\_A + Ca \qquad (294)$$

Reactant

Table 188: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	

Products

Table 189: Properties of each product.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{92} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamT\_Ca\_B\_off} \cdot [\mathrm{CamT\_Ca2\_AB}] \qquad (295)$$

10.93 Reaction `reaction_86`

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

Name Ca dissociating from CamT_ca2_AC site A

Reaction equation

$$CamT\_Ca2\_AC \longrightarrow CamT\_Ca1\_C + Ca \qquad (296)$$
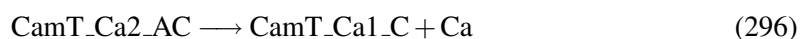
Reactant

Table 190: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	

Products

Table 191: Properties of each product.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{93} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_A\_off} \cdot [\text{CamT\_Ca2\_AC}] \tag{297}$$

10.94 Reaction reaction_87

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

Name Ca dissociating from CamT_ca2_AC site C

Reaction equation

$$\text{CamT\_Ca2\_AC} \longrightarrow \text{CamT\_Ca1\_A} + \text{Ca} \tag{298}$$

Reactant

Table 192: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	

Products

Table 193: Properties of each product.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{94} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_C\_off} \cdot [\text{CamT\_Ca2\_AC}] \qquad (299)$$

10.95 Reaction `reaction_88`

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

Name Ca dissociating from CamT_ca2_AD site A

Reaction equation

$$\text{CamT\_Ca2\_AD} \longrightarrow \text{CamT\_Ca1\_D} + \text{Ca} \qquad (300)$$

Reactant

Table 194: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	

Products

Table 195: Properties of each product.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{95} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_A\_off} \cdot [\text{CamT\_Ca2\_AD}] \qquad (301)$$

10.96 Reaction `reaction_89`

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

Name Ca dissociating from CamT_ca2_AD site D

Reaction equation

$$CamT\_Ca2\_AD \longrightarrow CamT\_Ca1\_A + Ca \tag{302}$$

Reactant

Table 196: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	

Products

Table 197: Properties of each product.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{96} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_D\_off} \cdot [\text{CamT\_Ca2\_AD}] \tag{303}$$

10.97 Reaction reaction_90

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

Name Ca dissociating from CamT_ca2_BC site B

Reaction equation

$$CamT\_Ca2\_BC \longrightarrow CamT\_Ca1\_C + Ca \tag{304}$$
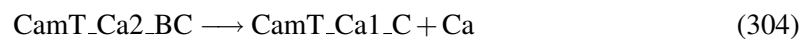
Reactant

Table 198: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	

Products

Table 199: Properties of each product.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{97} = \text{vol} \, (\text{Spine}) \cdot \text{K\_CamT\_Ca\_B\_off} \cdot [\text{CamT\_Ca2\_BC}] \qquad (305)$$

10.98 Reaction reaction_91

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

Name Ca dissociating from CamT_ca2_BC site C

Reaction equation

$$\text{CamT\_Ca2\_BC} \longrightarrow \text{CamT\_Ca1\_B} + \text{Ca} \qquad (306)$$
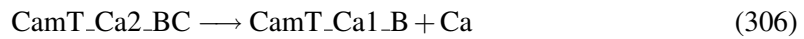
Reactant

Table 200: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	

Products

Table 201: Properties of each product.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{98} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_C\_off} \cdot [\text{CamT\_Ca2\_BC}] \tag{307}$$

10.99 Reaction `reaction_92`

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

Name Ca dissociating from CamT_ca2_BD site B

Reaction equation

$$\text{CamT\_Ca2\_BD} \longrightarrow \text{CamT\_Ca1\_D} + \text{Ca} \tag{308}$$

Reactant

Table 202: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	

Products

Table 203: Properties of each product.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{99} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_B\_off} \cdot [\text{CamT\_Ca2\_BD}] \tag{309}$$

10.100 Reaction `reaction_93`

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

Name Ca dissociating from CamT_ca2_BD site D

Reaction equation

$$\text{CamT\_Ca2\_BD} \longrightarrow \text{CamT\_Ca1\_B} + \text{Ca} \tag{310}$$
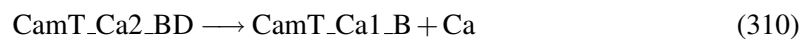
Reactant

Table 204: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	

Products

Table 205: Properties of each product.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{100} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamT\_Ca\_D\_off} \cdot [\mathrm{CamT\_Ca2\_BD}] \tag{311}$$

10.101 Reaction reaction_94

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

Name Ca dissociating from CamT_ca2_CD site C

Reaction equation

$$\mathrm{CamT\_Ca2\_CD} \longrightarrow \mathrm{CamT\_Ca1\_D} + \mathrm{Ca} \tag{312}$$
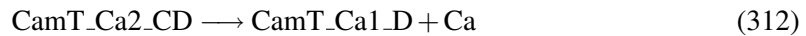
Reactant

Table 206: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	

Products

Table 207: Properties of each product.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{101} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_C\_off} \cdot [\text{CamT\_Ca2\_CD}] \tag{313}$$

10.102 Reaction `reaction_95`

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

Name Ca dissociating from CamT_ca2_CD site D

Reaction equation

$$\text{CamT\_Ca2\_CD} \longrightarrow \text{CamT\_Ca1\_C} + \text{Ca} \tag{314}$$
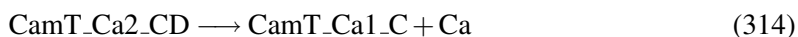
Reactant

Table 208: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	

Products

Table 209: Properties of each product.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{102} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_D\_off} \cdot [\text{CamT\_Ca2\_CD}] \tag{315}$$

10.103 Reaction `reaction_96`

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

Name Ca binding to CamT_ca2_AB site C

Reaction equation

$$CamT\_Ca2\_AB + Ca \longrightarrow CamT\_Ca3\_ABC \tag{316}$$

Reactants

Table 210: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	
Ca	Ca	

Product

Table 211: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{103} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_AB}] \cdot [\text{Ca}] \tag{317}$$

10.104 Reaction `reaction_97`

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

Name Ca binding to CamT_ca2_AB site D

Reaction equation

$$CamT\_Ca2\_AB + Ca \longrightarrow CamT\_Ca3\_ABD \tag{318}$$

Reactants

Table 212: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	

Id	Name	SBO
Ca	Ca	

Product

Table 213: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{104} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_AB}] \cdot [\text{Ca}] \tag{319}$$

10.105 Reaction reaction_98

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

Name Ca binding to CamT_ca2_AC site B

Reaction equation

$$\text{CamT\_Ca2\_AC} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_ABC} \tag{320}$$

Reactants

Table 214: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	
Ca	Ca	

Product

Table 215: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{105} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_AC}] \cdot [\text{Ca}] \tag{321}$$

10.106 Reaction `reaction_99`

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

Name Ca binding to CamT_ca2_AC site D

Reaction equation

$$\text{CamT\_Ca2\_AC} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_ACD} \tag{322}$$

Reactants

Table 216: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	
Ca	Ca	

Product

Table 217: Properties of each product.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{106} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_AC}] \cdot [\text{Ca}] \tag{323}$$

10.107 Reaction `reaction_100`

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

Name Ca binding to CamT_Ca2_AD site B

Reaction equation

$$\text{CamT\_Ca2\_AD} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_ABD} \tag{324}$$
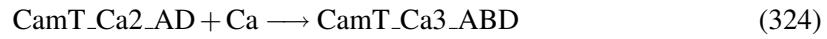
Reactants

Table 218: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	
Ca	Ca	

Product

Table 219: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{107} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_AD}] \cdot [\text{Ca}] \tag{325}$$

10.108 Reaction `reaction_101`

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

Name Ca binding to CamT_Ca2_AD site C

Reaction equation

$$\text{CamT\_Ca2\_AD} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_ACD} \tag{326}$$

Reactants

Table 220: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	
Ca	Ca	

Product

Table 221: Properties of each product.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{108} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamT\_Ca2\_AD}] \cdot [\mathrm{Ca}] \tag{327}$$

10.109 Reaction reaction_102

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

Name Ca binding to CamT_Ca2_BC site A

Reaction equation

$$\mathrm{CamT\_Ca2\_BC} + \mathrm{Ca} \longrightarrow \mathrm{CamT\_Ca3\_ABC} \tag{328}$$
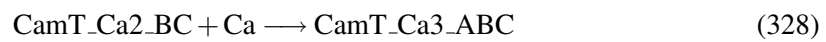
Reactants

Table 222: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	
Ca	Ca	

Product

Table 223: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{109} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamT\_Ca2\_BC}] \cdot [\mathrm{Ca}] \tag{329}$$

10.110 Reaction `reaction_103`

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

Name Ca binding to CamT_Ca2_BC site D

Reaction equation

$$\text{CamT\_Ca2\_BC} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_BCD} \tag{330}$$

Reactants

Table 224: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	
Ca	Ca	

Product

Table 225: Properties of each product.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{110} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_BC}] \cdot [\text{Ca}] \tag{331}$$

10.111 Reaction `reaction_104`

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

Name Ca binding to CamT_Ca2_BD site A

Reaction equation

$$\text{CamT\_Ca2\_BD} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_ABD} \tag{332}$$

Reactants

Table 226: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	
Ca	Ca	

Product

Table 227: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{111} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_BD}] \cdot [\text{Ca}] \tag{333}$$

10.112 Reaction `reaction_105`

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

Name Ca binding to CamT_Ca2_BD site C

Reaction equation

$$\text{CamT\_Ca2\_BD} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_BCD} \tag{334}$$

Reactants

Table 228: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	
Ca	Ca	

Product

Table 229: Properties of each product.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{112} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_BD}] \cdot [\text{Ca}] \tag{335}$$

10.113 Reaction reaction_106

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

Name Ca binding to CamT_Ca2_CD site A

Reaction equation

$$\text{CamT\_Ca2\_CD} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_ACD} \tag{336}$$

Reactants

Table 230: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	
Ca	Ca	

Product

Table 231: Properties of each product.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{113} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_CD}] \cdot [\text{Ca}] \tag{337}$$

10.114 Reaction `reaction_107`

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

Name Ca binding to CamT_Ca2_CD site B

Reaction equation

$$\text{CamT\_Ca2\_CD} + \text{Ca} \longrightarrow \text{CamT\_Ca3\_BCD} \tag{338}$$

Reactants

Table 232: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	
Ca	Ca	

Product

Table 233: Properties of each product.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{114} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca2\_CD}] \cdot [\text{Ca}] \tag{339}$$

10.115 Reaction `reaction_108`

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

Name Ca dissociating from CamT_Ca3_ABC site B

Reaction equation

$$\text{CamT\_Ca3\_ABC} \longrightarrow \text{CamT\_Ca2\_AC} + \text{Ca} \tag{340}$$

Reactant

Table 234: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Products

Table 235: Properties of each product.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{115} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_B\_off} \cdot [\text{CamT\_Ca3\_ABC}] \tag{341}$$

10.116 Reaction reaction_109

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

Name Ca dissociating from CamT_Ca3_ABC site A

Reaction equation

$$\text{CamT\_Ca3\_ABC} \longrightarrow \text{CamT\_Ca2\_BC} + \text{Ca} \tag{342}$$
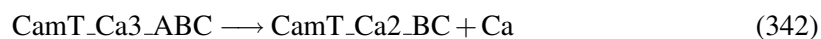
Reactant

Table 236: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Products

Table 237: Properties of each product.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{116} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_A\_off} \cdot [\text{CamT\_Ca3\_ABC}] \tag{343}$$

10.117 Reaction `reaction_110`

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

Name Ca dissociating from CamT_Ca3_ABD site D

Reaction equation

$$\text{CamT\_Ca3\_ABD} \longrightarrow \text{CamT\_Ca2\_AB} + \text{Ca} \tag{344}$$

Reactant

Table 238: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	

Products

Table 239: Properties of each product.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{117} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_D\_off} \cdot [\text{CamT\_Ca3\_ABD}] \tag{345}$$

10.118 Reaction `reaction_111`

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

Name Ca dissociating from CamT_Ca3_ABD site B

Reaction equation

$$CamT\_Ca3\_ABD \longrightarrow CamT\_Ca2\_AD + Ca \tag{346}$$
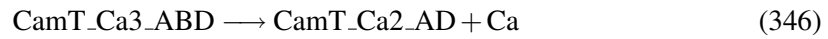
Reactant

Table 240: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	

Products

Table 241: Properties of each product.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{118} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_B\_off} \cdot [\text{CamT\_Ca3\_ABD}] \tag{347}$$

10.119 Reaction `reaction_112`

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

Name Ca dissociating from CamT_Ca3_ABD site A

Reaction equation

$$CamT\_Ca3\_ABD \longrightarrow CamT\_Ca2\_BD + Ca \tag{348}$$
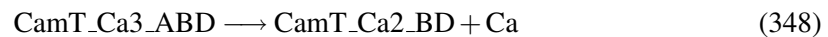
Reactant

Table 242: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	

Products

Table 243: Properties of each product.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{119} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamT\_Ca\_A\_off} \cdot [\mathrm{CamT\_Ca3\_ABD}] \qquad (349)$$

10.120 Reaction `reaction_113`

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

Name Ca dissociating from CamT_Ca3_ACD site D

Reaction equation

$$\mathrm{CamT\_Ca3\_ACD} \longrightarrow \mathrm{CamT\_Ca2\_AC} + \mathrm{Ca} \qquad (350)$$
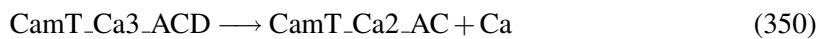
Reactant

Table 244: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	

Products

Table 245: Properties of each product.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{120} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_D\_off} \cdot [\text{CamT\_Ca3\_ACD}] \tag{351}$$

10.121 Reaction `reaction_114`

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

Name Ca dissociating from CamT_Ca3_ACD site C

Reaction equation

$$\text{CamT\_Ca3\_ACD} \longrightarrow \text{CamT\_Ca2\_AD} + \text{Ca} \tag{352}$$

Reactant

Table 246: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	

Products

Table 247: Properties of each product.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{121} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_C\_off} \cdot [\text{CamT\_Ca3\_ACD}] \tag{353}$$

10.122 Reaction `reaction_115`

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

Name Ca dissociating from CamT_Ca3_ACD site A

Reaction equation

$$\text{CamT\_Ca3\_ACD} \longrightarrow \text{CamT\_Ca2\_CD} + \text{Ca} \tag{354}$$
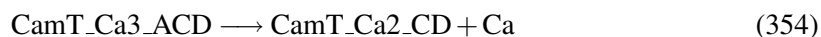
Reactant

Table 248: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	

Products

Table 249: Properties of each product.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{122} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_A\_off} \cdot [\text{CamT\_Ca3\_ACD}] \tag{355}$$

10.123 Reaction reaction_116

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

Name Ca dissociating from CamT_Ca3_BCD site D

Reaction equation

$$\text{CamT\_Ca3\_BCD} \longrightarrow \text{CamT\_Ca2\_BC} + \text{Ca} \tag{356}$$
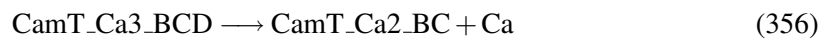
Reactant

Table 250: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	

Products

Table 251: Properties of each product.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{123} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_D\_off} \cdot [\text{CamT\_Ca3\_BCD}] \tag{357}$$

10.124 Reaction `reaction_117`

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

Name Ca dissociating from CamT_Ca3_BCD site C

Reaction equation

$$\text{CamT\_Ca3\_BCD} \longrightarrow \text{CamT\_Ca2\_BD} + \text{Ca} \tag{358}$$

Reactant

Table 252: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	

Products

Table 253: Properties of each product.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{124} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_C\_off} \cdot [\text{CamT\_Ca3\_BCD}] \tag{359}$$

10.125 Reaction `reaction_118`

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

Name Ca dissociating from CamT_Ca3_BCD site B

Reaction equation

$$CamT\_Ca3\_BCD \longrightarrow CamT\_Ca2\_CD + Ca \qquad (360)$$
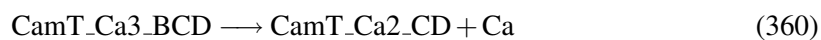
Reactant

Table 254: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	

Products

Table 255: Properties of each product.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{125} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_B\_off} \cdot [\text{CamT\_Ca3\_BCD}] \qquad (361)$$

10.126 Reaction `reaction_119`

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

Name Ca binding to CamT_Ca3_ABC site D

Reaction equation

$$CamT\_Ca3\_ABC + Ca \longrightarrow CamT\_Ca4\_ABCD \qquad (362)$$

Reactants

Table 256: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Id	Name	SBO
Ca	Ca	

Product

Table 257: Properties of each product.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{126} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca3\_ABC}] \cdot [\text{Ca}] \tag{363}$$

10.127 Reaction `reaction_120`

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

Name Ca binding to CamT_Ca3_ABD site C

Reaction equation

$$\text{CamT\_Ca3\_ABD} + \text{Ca} \longrightarrow \text{CamT\_Ca4\_ABCD} \tag{364}$$

Reactants

Table 258: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	
Ca	Ca	

Product

Table 259: Properties of each product.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{127} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca3\_ABD}] \cdot [\text{Ca}] \tag{365}$$

10.128 Reaction `reaction_121`

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

Name Ca binding to CamT_Ca3_ACD site B

Reaction equation

$$\text{CamT\_Ca3\_ACD} + \text{Ca} \longrightarrow \text{CamT\_Ca4\_ABCD} \tag{366}$$
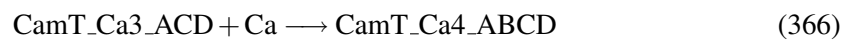
Reactants

Table 260: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	
Ca	Ca	

Product

Table 261: Properties of each product.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{128} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca3\_ACD}] \cdot [\text{Ca}] \tag{367}$$

10.129 Reaction `reaction_122`

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

Name Ca binding to CamT_Ca3_BCD site A

Reaction equation

$$\text{CamT\_Ca3\_BCD} + \text{Ca} \longrightarrow \text{CamT\_Ca4\_ABCD} \tag{368}$$
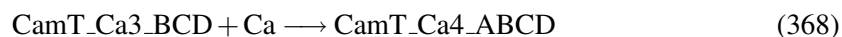
Reactants

Table 262: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	
Ca	Ca	

Product

Table 263: Properties of each product.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{129} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamT\_Ca3\_BCD}] \cdot [\text{Ca}] \tag{369}$$

10.130 Reaction `reaction_123`

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

Name Ca dissociating from CamT_Ca4_ABCD site D

Reaction equation

$$\text{CamT\_Ca4\_ABCD} \longrightarrow \text{CamT\_Ca3\_ABC} + \text{Ca} \tag{370}$$
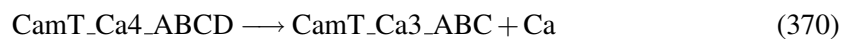
Reactant

Table 264: Properties of each reactant.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Products

Table 265: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{130} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_CamT\_Ca\_D\_off} \cdot [\text{CamT\_Ca4\_ABCD}] \tag{371}$$

10.131 Reaction reaction_124

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

Name Ca dissociating from CamT_Ca4_ABCD site C

Reaction equation

$$\text{CamT\_Ca4\_ABCD} \longrightarrow \text{CamT\_Ca3\_ABD} + \text{Ca} \tag{372}$$
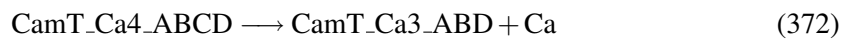
Reactant

Table 266: Properties of each reactant.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Products

Table 267: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

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$$v_{131} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_C\_off} \cdot [\text{CamT\_Ca4\_ABCD}] \tag{373}$$

10.132 Reaction `reaction_125`

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

Name Ca dissociating from CamT_Ca4_ABCD site B

Reaction equation

$$\text{CamT\_Ca4\_ABCD} \longrightarrow \text{CamT\_Ca3\_ACD} + \text{Ca} \tag{374}$$
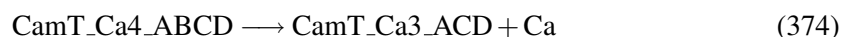
Reactant

Table 268: Properties of each reactant.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Products

Table 269: Properties of each product.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{132} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_B\_off} \cdot [\text{CamT\_Ca4\_ABCD}] \tag{375}$$

10.133 Reaction `reaction_126`

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

Name Ca dissociating from CamT_Ca4_ABCD site A

Reaction equation

$$\text{CamT\_Ca4\_ABCD} \longrightarrow \text{CamT\_Ca3\_BCD} + \text{Ca} \tag{376}$$
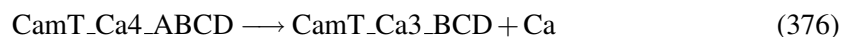
Reactant

Table 270: Properties of each reactant.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Products

Table 271: Properties of each product.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{133} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_A\_off} \cdot [\text{CamT\_Ca4\_ABCD}] \tag{377}$$

10.134 Reaction reaction_127

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

Name Transition CamR to CamT

Reaction equation

$$\text{CamR} \longrightarrow \text{CamT} \tag{378}$$

Reactant

Table 272: Properties of each reactant.

Id	Name	SBO
CamR	CamR	

Product

Table 273: Properties of each product.

Id	Name	SBO
CamT	CamT	

Id	Name	SBO

Kinetic Law

Derived unit contains undeclared units

$$v_{134} = \text{vol}(\text{Spine}) \cdot \text{K\_CamR\_T} \cdot [\text{CamR}] \qquad (379)$$

10.135 Reaction `reaction_128`

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

Name Transition CamT to CamR

Reaction equation

$$\text{CamT} \longrightarrow \text{CamR} \qquad (380)$$

Reactant

Table 274: Properties of each reactant.

Id	Name	SBO
CamT	CamT	

Product

Table 275: Properties of each product.

Id	Name	SBO
CamR	CamR	

Kinetic Law

Derived unit contains undeclared units

$$v_{135} = \text{vol}(\text{Spine}) \cdot \text{K\_CamT\_R} \cdot [\text{CamT}] \qquad (381)$$

10.136 Reaction `reaction_129`

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

Name Transition CamR_Ca1_A to CamT_Ca1_A

Reaction equation

$$\text{CamR\_Ca1\_A} \longrightarrow \text{CamT\_Ca1\_A} \tag{382}$$

Reactant

Table 276: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	

Product

Table 277: Properties of each product.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	

Kinetic Law

Derived unit contains undeclared units

$$v_{136} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_to\_T\_Ca1} \cdot [\text{CamR\_Ca1\_A}] \tag{383}$$

10.137 Reaction reaction_130

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

Name Transition CamR_Ca1_B to CamT_Ca1_B

Reaction equation

$$\text{CamR\_Ca1\_B} \longrightarrow \text{CamT\_Ca1\_B} \tag{384}$$
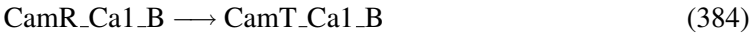
Reactant

Table 278: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	

Product

Table 279: Properties of each product.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	

Kinetic Law

Derived unit contains undeclared units

$$v_{137} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca1} \cdot [\text{CamR\_Ca1\_B}] \tag{385}$$

10.138 Reaction `reaction_131`

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

Name Transition CamR_Ca1_C to CamT_Ca1_C

Reaction equation

$$\text{CamR\_Ca1\_C} \longrightarrow \text{CamT\_Ca1\_C} \tag{386}$$

Reactant

Table 280: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	

Product

Table 281: Properties of each product.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	

Kinetic Law

Derived unit contains undeclared units

$$v_{138} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca1} \cdot [\text{CamR\_Ca1\_C}] \tag{387}$$

10.139 Reaction `reaction_132`

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

Name Transition CamR_Ca1_D to CamT_Ca1_D

Reaction equation

$$CamR\_Ca1\_D \longrightarrow CamT\_Ca1\_D \tag{388}$$

Reactant

Table 282: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	

Product

Table 283: Properties of each product.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	

Kinetic Law

Derived unit contains undeclared units

$$v_{139} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca1} \cdot [\text{CamR\_Ca1\_D}] \tag{389}$$

10.140 Reaction `reaction_133`

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

Name Transition CamT_Ca1_A to CamR_Ca1_A

Reaction equation

$$CamT\_Ca1\_A \longrightarrow CamR\_Ca1\_A \tag{390}$$

Reactant

Table 284: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_A	CamT_Ca1_A	

Product

Table 285: Properties of each product.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	

Kinetic Law

Derived unit contains undeclared units

$$v_{140} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamT\_to\_R\_Ca1} \cdot [\mathrm{CamT\_Ca1\_A}] \qquad (391)$$

10.141 Reaction `reaction_134`

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

Name Transition CamT_Ca1_B to CamR_Ca1_B

Reaction equation

$$\mathrm{CamT\_Ca1\_B} \longrightarrow \mathrm{CamR\_Ca1\_B} \qquad (392)$$
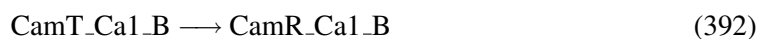
Reactant

Table 286: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_B	CamT_Ca1_B	

Product

Table 287: Properties of each product.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	

Kinetic Law

Derived unit contains undeclared units

$$v_{141} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca1} \cdot [\text{CamT\_Ca1\_B}] \tag{393}$$

10.142 Reaction `reaction_135`

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

Name Transition CamT_Ca1_C to CamR_Ca1_C

Reaction equation

$$\text{CamT\_Ca1\_C} \longrightarrow \text{CamR\_Ca1\_C} \tag{394}$$

Reactant

Table 288: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_C	CamT_Ca1_C	

Product

Table 289: Properties of each product.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	

Kinetic Law

Derived unit contains undeclared units

$$v_{142} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca1} \cdot [\text{CamT\_Ca1\_C}] \tag{395}$$

10.143 Reaction `reaction_136`

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

Name Transition CamT_Ca1_D to CamR_Ca1_D

Reaction equation

$$\text{CamT\_Ca1\_D} \longrightarrow \text{CamR\_Ca1\_D} \tag{396}$$

Reactant

Table 290: Properties of each reactant.

Id	Name	SBO
CamT_Ca1_D	CamT_Ca1_D	

Product

Table 291: Properties of each product.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	

Kinetic Law

Derived unit contains undeclared units

$$v_{143} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca1} \cdot [\text{CamT\_Ca1\_D}] \tag{397}$$

10.144 Reaction `reaction_137`

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

Name Transition CamR_Ca2_AB to CamT_Ca2_AB

Reaction equation

$$\text{CamR\_Ca2\_AB} \longrightarrow \text{CamT\_Ca2\_AB} \tag{398}$$

Reactant

Table 292: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	

Product

Table 293: Properties of each product.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{144} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca2} \cdot [\text{CamR\_Ca2\_AB}] \tag{399}$$

10.145 Reaction reaction_138

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

Name Transition CamR_Ca2_AC to CamT_Ca2_AC

Reaction equation

$$\text{CamR\_Ca2\_AC} \longrightarrow \text{CamT\_Ca2\_AC} \tag{400}$$
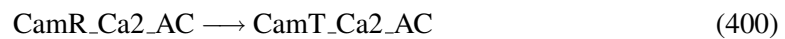
Reactant

Table 294: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	

Product

Table 295: Properties of each product.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{145} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca2} \cdot [\text{CamR\_Ca2\_AC}] \tag{401}$$

10.146 Reaction `reaction_139`

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

Name Transition CamR_Ca2_AD to CamT_Ca2_AD

Reaction equation

$$\text{CamR\_Ca2\_AD} \longrightarrow \text{CamT\_Ca2\_AD} \tag{402}$$
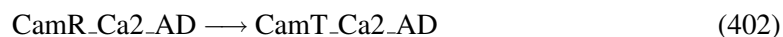
Reactant

Table 296: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	

Product

Table 297: Properties of each product.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{146} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca2} \cdot [\text{CamR\_Ca2\_AD}] \tag{403}$$

10.147 Reaction `reaction_140`

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

Name Transition CamR_Ca2_BC to CamT_Ca2_BC

Reaction equation

$$\text{CamR\_Ca2\_BC} \longrightarrow \text{CamT\_Ca2\_BC} \tag{404}$$
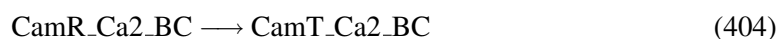
Reactant

Table 298: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	

Product

Table 299: Properties of each product.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{147} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca2} \cdot [\text{CamR\_Ca2\_BC}] \tag{405}$$

10.148 Reaction reaction_141

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

Name Transition CamR_Ca2_BD to CamT_Ca2_BD

Reaction equation

$$\text{CamR\_Ca2\_BD} \longrightarrow \text{CamT\_Ca2\_BD} \tag{406}$$
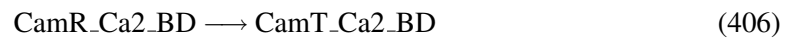
Reactant

Table 300: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	

Product

Table 301: Properties of each product.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	

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Kinetic Law

Derived unit contains undeclared units

$$v_{148} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca2} \cdot [\text{CamR\_Ca2\_BD}] \tag{407}$$

10.149 Reaction `reaction_142`

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

Name Transition CamR_Ca2_CD to CamT_Ca2_CD

Reaction equation

$$\text{CamR\_Ca2\_CD} \longrightarrow \text{CamT\_Ca2\_CD} \tag{408}$$
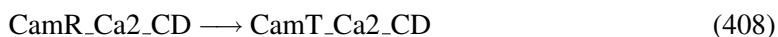
Reactant

Table 302: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	

Product

Table 303: Properties of each product.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{149} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca2} \cdot [\text{CamR\_Ca2\_CD}] \tag{409}$$

10.150 Reaction `reaction_143`

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

Name Transition CamT_Ca2_AB to CamR_Ca2_AB

Reaction equation

$$\text{CamT\_Ca2\_AB} \longrightarrow \text{CamR\_Ca2\_AB} \tag{410}$$

Reactant

Table 304: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	

Product

Table 305: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	

Kinetic Law

Derived unit contains undeclared units

$$v_{150} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca2} \cdot [\text{CamT\_Ca2\_AB}] \tag{411}$$

10.151 Reaction `reaction_144`

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

Name Transition CamT_Ca2_AC to CamR_Ca2_AC

Reaction equation

$$\text{CamT\_Ca2\_AC} \longrightarrow \text{CamR\_Ca2\_AC} \tag{412}$$

Reactant

Table 306: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AC	CamT_Ca2_AC	

Product

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Table 307: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	

Kinetic Law

Derived unit contains undeclared units

$$v_{151} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamT\_to\_R\_Ca2} \cdot [\mathrm{CamT\_Ca2\_AC}] \qquad (413)$$

10.152 Reaction reaction_145

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

Name Transition CamT_Ca2_AD to CamR_Ca2_AD

Reaction equation

$$\mathrm{CamT\_Ca2\_AD} \longrightarrow \mathrm{CamR\_Ca2\_AD} \qquad (414)$$
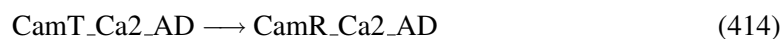
Reactant

Table 308: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_AD	CamT_Ca2_AD	

Product

Table 309: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	

Kinetic Law

Derived unit contains undeclared units

$$v_{152} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamT\_to\_R\_Ca2} \cdot [\mathrm{CamT\_Ca2\_AD}] \qquad (415)$$

10.153 Reaction `reaction_146`

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

Name Transition CamT_Ca2_BC to CamR_Ca2_BC

Reaction equation

$$CamT\_Ca2\_BC \longrightarrow CamR\_Ca2\_BC \tag{416}$$
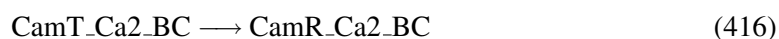
Reactant

Table 310: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BC	CamT_Ca2_BC	

Product

Table 311: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	

Kinetic Law

Derived unit contains undeclared units

$$v_{153} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_CamT\_to\_R\_Ca2 \cdot [CamT\_Ca2\_BC] \tag{417}$$

10.154 Reaction `reaction_147`

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

Name Transition CamT_Ca2_BD to CamR_Ca2_BD

Reaction equation

$$CamT\_Ca2\_BD \longrightarrow CamR\_Ca2\_BD \tag{418}$$
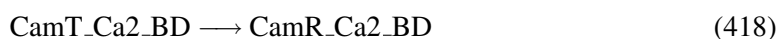
Reactant

Table 312: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_BD	CamT_Ca2_BD	

Product

Table 313: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	

Kinetic Law

Derived unit contains undeclared units

$$v_{154} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca2} \cdot [\text{CamT\_Ca2\_BD}] \qquad (419)$$

10.155 Reaction `reaction_148`

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

Name Transition CamT_Ca2_CD to CamR_Ca2_CD

Reaction equation

$$\text{CamT\_Ca2\_CD} \longrightarrow \text{CamR\_Ca2\_CD} \qquad (420)$$
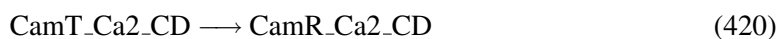
Reactant

Table 314: Properties of each reactant.

Id	Name	SBO
CamT_Ca2_CD	CamT_Ca2_CD	

Product

Table 315: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	

Kinetic Law

Derived unit contains undeclared units

$$v_{155} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamT\_to\_R\_Ca2} \cdot [\text{CamT\_Ca2\_CD}] \tag{421}$$

10.156 Reaction `reaction_149`

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

Name Transition CamR_Ca3_ABC to CamT_Ca3_ABC

Reaction equation

$$\text{CamR\_Ca3\_ABC} \longrightarrow \text{CamT\_Ca3\_ABC} \tag{422}$$
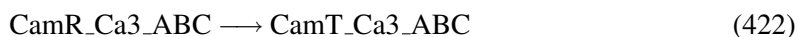
Reactant

Table 316: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Product

Table 317: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{156} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_to\_T\_Ca3} \cdot [\text{CamR\_Ca3\_ABC}] \tag{423}$$

10.157 Reaction `reaction_150`

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

Name Transition CamR_Ca3_ABD to CamT_Ca3_ABD

Reaction equation

$$\text{CamR\_Ca3\_ABD} \longrightarrow \text{CamT\_Ca3\_ABD} \tag{424}$$
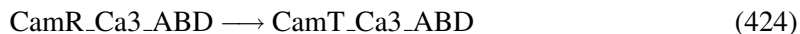
Reactant

Table 318: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	

Product

Table 319: Properties of each product.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{157} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca3} \cdot [\text{CamR\_Ca3\_ABD}] \tag{425}$$

10.158 Reaction `reaction_151`

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

Name Transition CamR_Ca3_ACD to CamT_Ca3_ACD

Reaction equation

$$\text{CamR\_Ca3\_ACD} \longrightarrow \text{CamT\_Ca3\_ACD} \tag{426}$$
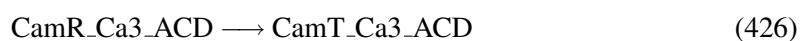
Reactant

Table 320: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	

Product

Table 321: Properties of each product.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{158} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca3} \cdot [\text{CamR\_Ca3\_ACD}] \tag{427}$$

10.159 Reaction reaction_152

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

Name Transition CamR_Ca3_BCD to CamT_Ca3_BCD

Reaction equation

$$\text{CamR\_Ca3\_BCD} \longrightarrow \text{CamT\_Ca3\_BCD} \tag{428}$$
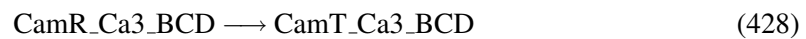
Reactant

Table 322: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	

Product

Table 323: Properties of each product.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{159} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_to\_T\_Ca3} \cdot [\text{CamR\_Ca3\_BCD}] \tag{429}$$

10.160 Reaction `reaction_153`

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

Name Transition CamT_Ca3_ABC to CamR_Ca3_ABC

Reaction equation

$$\mathrm{CamT\_Ca3\_ABC} \longrightarrow \mathrm{CamR\_Ca3\_ABC} \qquad (430)$$
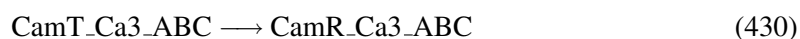
Reactant

Table 324: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Product

Table 325: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	

Kinetic Law

Derived unit contains undeclared units

$$v_{160} = \mathrm{vol\,(Spine)} \cdot \mathrm{K\_CamT\_to\_R\_Ca3} \cdot [\mathrm{CamT\_Ca3\_ABC}] \qquad (431)$$

10.161 Reaction `reaction_154`

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

Name Transition CamT_Ca3_ABD to CamR_Ca3_ABD

Reaction equation

$$\mathrm{CamT\_Ca3\_ABD} \longrightarrow \mathrm{CamR\_Ca3\_ABD} \qquad (432)$$
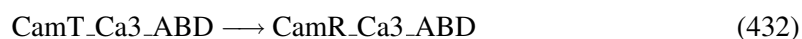
Reactant

Table 326: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABD	CamT_Ca3_ABD	

Product

Table 327: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	

Kinetic Law

Derived unit contains undeclared units

$$v_{161} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca3} \cdot [\text{CamT\_Ca3\_ABD}] \tag{433}$$

10.162 Reaction `reaction_155`

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

Name Transition CamT_Ca3_ACD to CamR_Ca3_ACD

Reaction equation

$$\text{CamT\_Ca3\_ACD} \longrightarrow \text{CamR\_Ca3\_ACD} \tag{434}$$
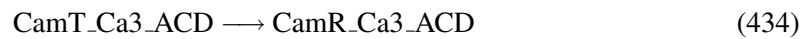
Reactant

Table 328: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ACD	CamT_Ca3_ACD	

Product

Table 329: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	

Kinetic Law

Derived unit contains undeclared units

$$v_{162} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca3} \cdot [\text{CamT\_Ca3\_ACD}] \qquad (435)$$

10.163 Reaction `reaction_156`

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

Name Transition CamT_Ca3_BCD to CamR_Ca3_BCD

Reaction equation

$$\text{CamT\_Ca3\_BCD} \longrightarrow \text{CamR\_Ca3\_BCD} \qquad (436)$$

Reactant

Table 330: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_BCD	CamT_Ca3_BCD	

Product

Table 331: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{163} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca3} \cdot [\text{CamT\_Ca3\_BCD}] \qquad (437)$$

10.164 Reaction `reaction_157`

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

Name Transition CamR_Ca4_ABCD to CamT_Ca4_ABCD

Reaction equation

$$\text{CamR\_Ca4\_ABCD} \longrightarrow \text{CamT\_Ca4\_ABCD} \qquad (438)$$
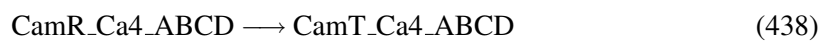
Reactant

Table 332: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Product

Table 333: Properties of each product.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{164} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_to\_T\_Ca4} \cdot [\mathrm{CamR\_Ca4\_ABCD}] \tag{439}$$

10.165 Reaction `reaction_158`

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

Name Transition CamT_Ca4_ABCD to CamR_Ca4_ABCD

Reaction equation

$$\mathrm{CamT\_Ca4\_ABCD} \longrightarrow \mathrm{CamR\_Ca4\_ABCD} \tag{440}$$
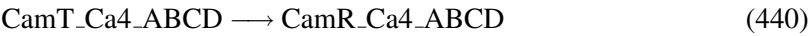
Reactant

Table 334: Properties of each reactant.

Id	Name	SBO
CamT_Ca4_ABCD	CamT_Ca4_ABCD	

Product

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Table 335: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	

Kinetic Law

Derived unit contains undeclared units

$$v_{165} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_to\_R\_Ca4} \cdot [\text{CamT\_Ca4\_ABCD}] \tag{441}$$

10.166 Reaction reaction_159

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

Name CamKII binding to CamR

Reaction equation

$$\text{CamR} + \text{CaMKII} \longrightarrow \text{CamR\_CaMKII} \tag{442}$$

Reactants

Table 336: Properties of each reactant.

Id	Name	SBO
CamR	CamR	
CaMKII	CaMKII	

Product

Table 337: Properties of each product.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{166} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR}] \cdot [\text{CaMKII}] \tag{443}$$

10.167 Reaction `reaction_160`

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

Name CamKII binding to CamR_Ca1_A

Reaction equation

$$\text{CamR\_Ca1\_A} + \text{CaMKII} \longrightarrow \text{CamR\_Ca1\_A\_CaMKII} \tag{444}$$

Reactants

Table 338: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
CaMKII	CaMKII	

Product

Table 339: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{167} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca1\_A}] \cdot [\text{CaMKII}] \tag{445}$$

10.168 Reaction `reaction_161`

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

Name CamKII binding to CamR_Ca1_B

Reaction equation

$$\text{CamR\_Ca1\_B} + \text{CaMKII} \longrightarrow \text{CamR\_Ca1\_B\_CaMKII} \tag{446}$$

Reactants

Table 340: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
CaMKII	CaMKII	

Product

Table 341: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{168} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot \left[\text{CamR\_Ca1\_B}\right] \cdot \left[\text{CaMKII}\right] \tag{447}$$

10.169 Reaction reaction_162

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

Name CamKII binding to CamR_Ca1_C

Reaction equation

$$\text{CamR\_Ca1\_C} + \text{CaMKII} \longrightarrow \text{CamR\_Ca1\_C\_CaMKII} \tag{448}$$

Reactants

Table 342: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
CaMKII	CaMKII	

Product

Table 343: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{169} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca1\_C}] \cdot [\text{CaMKII}] \quad (449)$$

10.170 Reaction reaction_163

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

Name CamKII binding to CamR_Ca1_D

Reaction equation

$$\text{CamR\_Ca1\_D} + \text{CaMKII} \longrightarrow \text{CamR\_Ca1\_D\_CaMKII} \quad (450)$$

Reactants

Table 344: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
CaMKII	CaMKII	

Product

Table 345: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{170} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca1\_D}] \cdot [\text{CaMKII}] \quad (451)$$

10.171 Reaction `reaction_164`

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

Name CamKII binding to CamR_Ca2_AB

Reaction equation

$$\text{CamR\_Ca2\_AB} + \text{CaMKII} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKII} \tag{452}$$
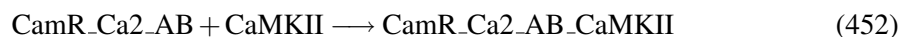
Reactants

Table 346: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	
CaMKII	CaMKII	

Product

Table 347: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{171} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_AB}] \cdot [\text{CaMKII}] \tag{453}$$

10.172 Reaction `reaction_165`

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

Name CamKII binding to CamR_Ca2_AC

Reaction equation

$$\text{CamR\_Ca2\_AC} + \text{CaMKII} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKII} \tag{454}$$
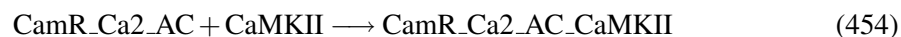
Reactants

Table 348: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
CaMKII	CaMKII	

Product

Table 349: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{172} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_AC}] \cdot [\text{CaMKII}] \qquad (455)$$

10.173 Reaction `reaction_166`

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

Name CamKII binding to CamR_Ca2_AD

Reaction equation

$$\text{CamR\_Ca2\_AD} + \text{CaMKII} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKII} \qquad (456)$$
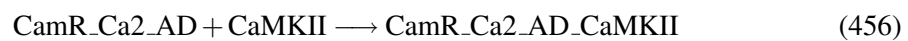
Reactants

Table 350: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
CaMKII	CaMKII	

Product

Table 351: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{173} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_CaMKII\_p\_on} \cdot [\mathrm{CamR\_Ca2\_AD}] \cdot [\mathrm{CaMKII}] \qquad (457)$$

10.174 Reaction `reaction_167`

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

Name CamKII binding to CamR_Ca2_BC

Reaction equation

$$\mathrm{CamR\_Ca2\_BC} + \mathrm{CaMKII} \longrightarrow \mathrm{CamR\_Ca2\_BC\_CaMKII} \qquad (458)$$
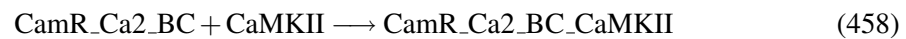
Reactants

Table 352: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
CaMKII	CaMKII	

Product

Table 353: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{174} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_CaMKII\_p\_on} \cdot [\mathrm{CamR\_Ca2\_BC}] \cdot [\mathrm{CaMKII}] \qquad (459)$$

10.175 Reaction `reaction_168`

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

Name CamKII binding to CamR_Ca2_BD

Reaction equation

$$CamR\_Ca2\_BD + CaMKII \longrightarrow CamR\_Ca2\_BD\_CaMKII \qquad (460)$$

Reactants

Table 354: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
CaMKII	CaMKII	

Product

Table 355: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{175} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_BD}] \cdot [\text{CaMKII}] \qquad (461)$$

10.176 Reaction `reaction_169`

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

Name CamKII binding to CamR_Ca2_CD

Reaction equation

$$CamR\_Ca2\_CD + CaMKII \longrightarrow CamR\_Ca2\_CD\_CaMKII \qquad (462)$$
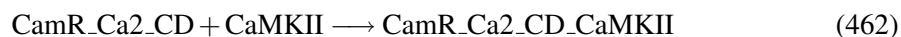
Reactants

Table 356: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	
CaMKII	CaMKII	

Product

Table 357: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{176} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_CD}] \cdot [\text{CaMKII}] \qquad (463)$$

10.177 Reaction `reaction_170`

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

Name CamKII binding to CamR_Ca3_ABC

Reaction equation

$$\text{CamR\_Ca3\_ABC} + \text{CaMKII} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKII} \qquad (464)$$

Reactants

Table 358: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	
CaMKII	CaMKII	

Product

Table 359: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{177} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca3\_ABC}] \cdot [\text{CaMKII}] \quad (465)$$

10.178 Reaction reaction_171

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

Name CamKII binding to CamR_Ca3_ABD

Reaction equation

$$\text{CamR\_Ca3\_ABD} + \text{CaMKII} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKII} \quad (466)$$

Reactants

Table 360: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	
CaMKII	CaMKII	

Product

Table 361: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{178} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca3\_ABD}] \cdot [\text{CaMKII}] \quad (467)$$

10.179 Reaction `reaction_172`

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

Name CamKII binding to CamR_Ca3_ACD

Reaction equation

$$\text{CamR\_Ca3\_ACD} + \text{CaMKII} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKII} \tag{468}$$
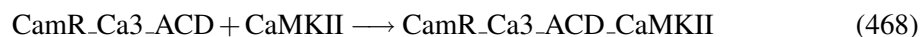
Reactants

Table 362: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	
CaMKII	CaMKII	

Product

Table 363: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{179} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca3\_ACD}] \cdot [\text{CaMKII}] \tag{469}$$

10.180 Reaction `reaction_173`

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

Name CamKII binding to CamR_Ca3_BCD

Reaction equation

$$\text{CamR\_Ca3\_BCD} + \text{CaMKII} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKII} \tag{470}$$

Reactants

Table 364: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	
CaMKII	CaMKII	

Product

Table 365: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{180} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_CaMKII\_p\_on} \cdot [\mathrm{CamR\_Ca3\_BCD}] \cdot [\mathrm{CaMKII}] \quad (471)$$

10.181 Reaction `reaction_174`

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

Name CamKII binding to CamR_Ca4_ABCD

Reaction equation

$$\mathrm{CamR\_Ca4\_ABCD} + \mathrm{CaMKII} \longrightarrow \mathrm{CamR\_Ca4\_ABCD\_CaMKII} \quad (472)$$

Reactants

Table 366: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	
CaMKII	CaMKII	

Product

Table 367: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{181} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca4\_ABCD}] \cdot [\text{CaMKII}] \quad (473)$$

10.182 Reaction reaction_175

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

Name CamKII dissociating from CamR

Reaction equation

$$\text{CamR\_CaMKII} \longrightarrow \text{CamR} + \text{CaMKII} \quad (474)$$

Reactant

Table 368: Properties of each reactant.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	

Products

Table 369: Properties of each product.

Id	Name	SBO
CamR	CamR	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{182} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_CaMKII}] \quad (475)$$

10.183 Reaction `reaction_176`

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

Name CamKII dissociating from CamR_Ca1_A

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKII} \longrightarrow \text{CamR\_Ca1\_A} + \text{CaMKII} \tag{476}$$

Reactant

Table 370: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	

Products

Table 371: Properties of each product.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{183} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca1\_A\_CaMKII}] \tag{477}$$

10.184 Reaction `reaction_177`

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

Name CamKII dissociating from CamR_Ca1_B

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKII} \longrightarrow \text{CamR\_Ca1\_B} + \text{CaMKII} \tag{478}$$

Reactant

Table 372: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	

Products

Table 373: Properties of each product.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{184} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca1\_B\_CaMKII}] \qquad (479)$$

10.185 Reaction `reaction_178`

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

Name CamKII dissociating from CamR_Ca1_C

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKII} \longrightarrow \text{CamR\_Ca1\_C} + \text{CaMKII} \qquad (480)$$

Reactant

Table 374: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	

Products

Table 375: Properties of each product.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	

Id	Name	SBO
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{185} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca1\_C\_CaMKII}] \qquad (481)$$

10.186 Reaction `reaction_179`

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

Name CamKII dissociating from CamR_Ca1_D

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKII} \longrightarrow \text{CamR\_Ca1\_D} + \text{CaMKII} \qquad (482)$$

Reactant

Table 376: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	

Products

Table 377: Properties of each product.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{186} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca1\_D\_CaMKII}] \qquad (483)$$

10.187 Reaction `reaction_180`

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

Name CamKII dissociating from CamR_Ca2_AB

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AB} + \text{CaMKII} \qquad (484)$$

Reactant

Table 378: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	

Products

Table 379: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{187} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca2\_AB\_CaMKII}] \qquad (485)$$

10.188 Reaction `reaction_181`

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

Name CamKII dissociating from CamR_Ca2_AC

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AC} + \text{CaMKII} \qquad (486)$$

Reactant

Table 380: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	

Products

Table 381: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{188} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca2\_AC\_CaMKII}] \tag{487}$$

10.189 Reaction `reaction_182`

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

Name CamKII dissociating from CamR_Ca2_AD

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AD} + \text{CaMKII} \tag{488}$$

Reactant

Table 382: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	

Products

Table 383: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{189} = \mathrm{vol\,(Spine)} \cdot \mathrm{K\_CamR\_CaMKII\_off} \cdot [\mathrm{CamR\_Ca2\_AD\_CaMKII}] \qquad (489)$$

10.190 Reaction `reaction_183`

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

Name CamKII dissociating from CamR_Ca2_BC

Reaction equation

$$\mathrm{CamR\_Ca2\_BC\_CaMKII} \longrightarrow \mathrm{CamR\_Ca2\_BC} + \mathrm{CaMKII} \qquad (490)$$

Reactant

Table 384: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Products

Table 385: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{190} = \mathrm{vol\,(Spine)} \cdot \mathrm{K\_CamR\_CaMKII\_off} \cdot [\mathrm{CamR\_Ca2\_BC\_CaMKII}] \qquad (491)$$

10.191 Reaction `reaction_184`

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

Name CamKII dissociating from CamR_Ca2_BD

Reaction equation

$$\mathrm{CamR\_Ca2\_BD\_CaMKII} \longrightarrow \mathrm{CamR\_Ca2\_BD} + \mathrm{CaMKII} \qquad (492)$$

Reactant

Table 386: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	

Products

Table 387: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{191} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_CamR\_CaMKII\_off} \cdot \left[\text{CamR\_Ca2\_BD\_CaMKII} \right] \qquad (493)$$

10.192 Reaction reaction_185

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

Name CamKII dissociating from CamR_Ca2_CD

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_CD} + \text{CaMKII} \qquad (494)$$

Reactant

Table 388: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	

Products

Table 389: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	

Id	Name	SBO
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{192} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca2\_CD\_CaMKII}] \tag{495}$$

10.193 Reaction `reaction_186`

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

Name CamKII dissociating from CamR_Ca3_ABC

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKII} \longrightarrow \text{CamR\_Ca3\_ABC} + \text{CaMKII} \tag{496}$$

Reactant

Table 390: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Products

Table 391: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{193} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca3\_ABC\_CaMKII}] \tag{497}$$

10.194 Reaction `reaction_187`

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

Name CamKII dissociating from CamR_Ca3_ABD

Reaction equation

$$CamR\_Ca3\_ABD\_CaMKII \longrightarrow CamR\_Ca3\_ABD + CaMKII \qquad (498)$$

Reactant

Table 392: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Products

Table 393: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{194} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_CaMKII\_off} \cdot [\mathrm{CamR\_Ca3\_ABD\_CaMKII}] \qquad (499)$$

10.195 Reaction `reaction_188`

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

Name CamKII dissociating from CamR_Ca3_ACD

Reaction equation

$$CamR\_Ca3\_ACD\_CaMKII \longrightarrow CamR\_Ca3\_ACD + CaMKII \qquad (500)$$

Reactant

Table 394: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Products

Table 395: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{195} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca3\_ACD\_CaMKII}] \qquad (501)$$

10.196 Reaction `reaction_189`

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

Name CamKII dissociating from CamR_Ca3_BCD

Reaction equation

$$\text{CamR\_Ca3\_BCD\_CaMKII} \longrightarrow \text{CamR\_Ca3\_BCD} + \text{CaMKII} \qquad (502)$$

Reactant

Table 396: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Products

Table 397: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{196} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca3\_BCD\_CaMKII}] \qquad (503)$$

10.197 Reaction `reaction_190`

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

Name CamKII dissociating from CamR_Ca4_ABCD

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKII} \longrightarrow \text{CamR\_Ca4\_ABCD} + \text{CaMKII} \qquad (504)$$

Reactant

Table 398: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Products

Table 399: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	
CaMKII	CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{197} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKII}] \qquad (505)$$

10.198 Reaction `reaction_191`

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

Name PP2B binding to CamR

Reaction equation

$$\text{CamR} + \text{PP2B} \longrightarrow \text{CamR\_PP2B} \qquad (506)$$

Reactants

Table 400: Properties of each reactant.

Id	Name	SBO
CamR	CamR	
PP2B	PP2B	

Product

Table 401: Properties of each product.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{198} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR}] \cdot [\text{PP2B}] \tag{507}$$

10.199 Reaction `reaction_192`

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

Name PP2B binding to CamR_Ca1_A

Reaction equation

$$\text{CamR\_Ca1\_A} + \text{PP2B} \longrightarrow \text{CamR\_Ca1\_A\_PP2B} \tag{508}$$

Reactants

Table 402: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
PP2B	PP2B	

Product

Table 403: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{199} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_on} \cdot [\mathrm{CamR\_Ca1\_A}] \cdot [\mathrm{PP2B}] \tag{509}$$

10.200 Reaction reaction_193

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

Name PP2B binding to CamR_Ca1_B

Reaction equation

$$\mathrm{CamR\_Ca1\_B} + \mathrm{PP2B} \longrightarrow \mathrm{CamR\_Ca1\_B\_PP2B} \tag{510}$$
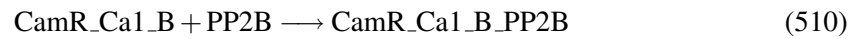
Reactants

Table 404: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
PP2B	PP2B	

Product

Table 405: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{200} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_on} \cdot [\mathrm{CamR\_Ca1\_B}] \cdot [\mathrm{PP2B}] \tag{511}$$

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10.201 Reaction reaction_194

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

Name PP2B binding to CamR_Ca1_C

Reaction equation

$$\text{CamR\_Ca1\_C} + \text{PP2B} \longrightarrow \text{CamR\_Ca1\_C\_PP2B} \tag{512}$$

Reactants

Table 406: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
PP2B	PP2B	

Product

Table 407: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{201} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR\_Ca1\_C}] \cdot [\text{PP2B}] \tag{513}$$

10.202 Reaction reaction_195

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

Name PP2B binding to CamR_Ca1_D

Reaction equation

$$\text{CamR\_Ca1\_D} + \text{PP2B} \longrightarrow \text{CamR\_Ca1\_D\_PP2B} \tag{514}$$

Reactants

Table 408: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
PP2B	PP2B	

Product

Table 409: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{202} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR\_Ca1\_D}] \cdot [\text{PP2B}] \tag{515}$$

10.203 Reaction `reaction_196`

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

Name PP2B binding to CamR_Ca2_AB

Reaction equation

$$\text{CamR\_Ca2\_AB} + \text{PP2B} \longrightarrow \text{CamR\_Ca2\_AB\_PP2B} \tag{516}$$

Reactants

Table 410: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	
PP2B	PP2B	

Product

Table 411: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{203} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR\_Ca2\_AB}] \cdot [\text{PP2B}] \tag{517}$$

10.204 Reaction reaction_198

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

Name PP2B binding to CamR_Ca2_AD

Reaction equation

$$\text{CamR\_Ca2\_AD} + \text{PP2B} \longrightarrow \text{CamR\_Ca2\_AD\_PP2B} \tag{518}$$

Reactants

Table 412: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
PP2B	PP2B	

Product

Table 413: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{204} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR\_Ca2\_AD}] \cdot [\text{PP2B}] \tag{519}$$

10.205 Reaction reaction_199

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

Name PP2B binding to CamR_Ca2_BC

Reaction equation

$$\text{CamR\_Ca2\_BC} + \text{PP2B} \longrightarrow \text{CamR\_Ca2\_BC\_PP2B} \tag{520}$$

Reactants

Table 414: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
PP2B	PP2B	

Product

Table 415: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{205} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR\_Ca2\_BC}] \cdot [\text{PP2B}] \tag{521}$$

10.206 Reaction reaction_200

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

Name PP2B binding to CamR_Ca2_BD

Reaction equation

$$\text{CamR\_Ca2\_BD} + \text{PP2B} \longrightarrow \text{CamR\_Ca2\_BD\_PP2B} \tag{522}$$

Reactants

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Table 416: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
PP2B	PP2B	

Product

Table 417: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{206} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_on} \cdot [\mathrm{CamR\_Ca2\_BD}] \cdot [\mathrm{PP2B}] \qquad (523)$$

10.207 Reaction `reaction_201`

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

Name PP2B binding to CamR_Ca2_CD

Reaction equation

$$\mathrm{CamR\_Ca2\_CD} + \mathrm{PP2B} \longrightarrow \mathrm{CamR\_Ca2\_CD\_PP2B} \qquad (524)$$

Reactants

Table 418: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	
PP2B	PP2B	

Product

Table 419: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{207} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_on} \cdot [\mathrm{CamR\_Ca2\_CD}] \cdot [\mathrm{PP2B}] \tag{525}$$

10.208 Reaction reaction_202

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

Name PP2B binding to CamR_Ca3_ABC

Reaction equation

$$\mathrm{CamR\_Ca3\_ABC} + \mathrm{PP2B} \longrightarrow \mathrm{CamR\_Ca3\_ABC\_PP2B} \tag{526}$$

Reactants

Table 420: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	
PP2B	PP2B	

Product

Table 421: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{208} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_on} \cdot [\mathrm{CamR\_Ca3\_ABC}] \cdot [\mathrm{PP2B}] \tag{527}$$

10.209 Reaction `reaction_203`

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

Name PP2B binding to CamR_Ca3_ABD

Reaction equation

$$CamR\_Ca3\_ABD + PP2B \longrightarrow CamR\_Ca3\_ABD\_PP2B \tag{528}$$

Reactants

Table 422: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	
PP2B	PP2B	

Product

Table 423: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{209} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_on} \cdot [CamR\_Ca3\_ABD] \cdot [PP2B] \tag{529}$$

10.210 Reaction `reaction_204`

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

Name PP2B binding to CamR_Ca3_ACD

Reaction equation

$$CamR\_Ca3\_ACD + PP2B \longrightarrow CamR\_Ca3\_ACD\_PP2B \tag{530}$$

Reactants

Table 424: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	
PP2B	PP2B	

Product

Table 425: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{210} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_CamR\_PP2B\_on} \cdot \left[\text{CamR\_Ca3\_ACD} \right] \cdot \left[\text{PP2B} \right] \tag{531}$$

10.211 Reaction reaction_205

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

Name PP2B binding to CamR_Ca3_BCD

Reaction equation

$$\text{CamR\_Ca3\_BCD} + \text{PP2B} \longrightarrow \text{CamR\_Ca3\_BCD\_PP2B} \tag{532}$$

Reactants

Table 426: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	
PP2B	PP2B	

Product

Table 427: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{211} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR\_Ca3\_BCD}] \cdot [\text{PP2B}] \tag{533}$$

10.212 Reaction reaction_206

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

Name PP2B binding to CamR_Ca4_ABCD

Reaction equation

$$\text{CamR\_Ca4\_ABCD} + \text{PP2B} \longrightarrow \text{CamR\_Ca4\_ABCD\_PP2B} \tag{534}$$
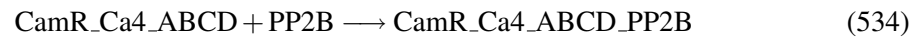
Reactants

Table 428: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	
PP2B	PP2B	

Product

Table 429: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{212} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR\_Ca4\_ABCD}] \cdot [\text{PP2B}] \tag{535}$$

10.213 Reaction `reaction_207`

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

Name PP2B dissociating from CamR

Reaction equation

$$CamR\_PP2B \longrightarrow CamR + PP2B \tag{536}$$

Reactant

Table 430: Properties of each reactant.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	

Products

Table 431: Properties of each product.

Id	Name	SBO
CamR	CamR	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{213} = \text{vol}\left(\text{Spine}\right) \cdot K\_CamR\_PP2B\_off \cdot \left[CamR\_PP2B\right] \tag{537}$$

10.214 Reaction `reaction_208`

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

Name PP2B dissociating from CamR_Ca1_A

Reaction equation

$$CamR\_Ca1\_A\_PP2B \longrightarrow CamR\_Ca1\_A + PP2B \tag{538}$$
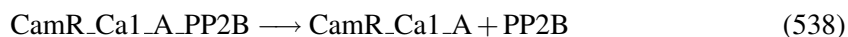
Reactant

Table 432: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	

Products

Table 433: Properties of each product.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{214} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca1\_A\_PP2B}] \tag{539}$$

10.215 Reaction `reaction_209`

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

Name PP2B dissociating from CamR_Ca1_B

Reaction equation

$$\text{CamR\_Ca1\_B\_PP2B} \longrightarrow \text{CamR\_Ca1\_B} + \text{PP2B} \tag{540}$$
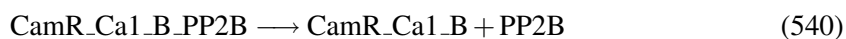
Reactant

Table 434: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	

Products

Table 435: Properties of each product.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	

Id	Name	SBO
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{215} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca1\_B\_PP2B}] \qquad (541)$$

10.216 Reaction `reaction_210`

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

Name PP2B dissociating from CamR_Ca1_C

Reaction equation

$$\text{CamR\_Ca1\_C\_PP2B} \longrightarrow \text{CamR\_Ca1\_C} + \text{PP2B} \qquad (542)$$
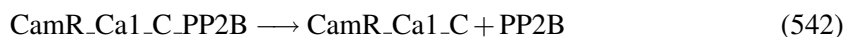
Reactant

Table 436: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	

Products

Table 437: Properties of each product.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{216} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca1\_C\_PP2B}] \qquad (543)$$

10.217 Reaction `reaction_211`

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

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Name PP2B dissociating from CamR_Ca1_D

Reaction equation

$$CamR\_Ca1\_D\_PP2B \longrightarrow CamR\_Ca1\_D + PP2B \qquad (544)$$
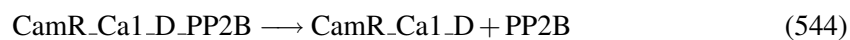
Reactant

Table 438: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	

Products

Table 439: Properties of each product.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{217} = vol\,(Spine) \cdot K\_CamR\_PP2B\_off \cdot [CamR\_Ca1\_D\_PP2B] \qquad (545)$$

10.218 Reaction `reaction_212`

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

Name PP2B dissociating from CamR_Ca2_AB

Reaction equation

$$CamR\_Ca2\_AB\_PP2B \longrightarrow CamR\_Ca2\_AB + PP2B \qquad (546)$$
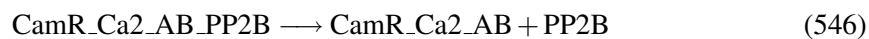
Reactant

Table 440: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Products

Table 441: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{218} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca2\_AB\_PP2B}] \tag{547}$$

10.219 Reaction reaction_213

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

Name PP2B dissociating from CamR_Ca2_AC

Reaction equation

$$\text{CamR\_Ca2\_AC\_PP2B} \longrightarrow \text{CamR\_Ca2\_AC} + \text{PP2B} \tag{548}$$
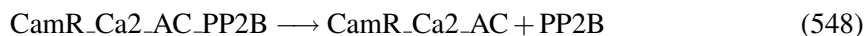
Reactant

Table 442: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Products

Table 443: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{219} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca2\_AC\_PP2B}] \tag{549}$$

10.220 Reaction `reaction_214`

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

Name PP2B dissociating from CamR_Ca2_AD

Reaction equation

$$\text{CamR\_Ca2\_AD\_PP2B} \longrightarrow \text{CamR\_Ca2\_AD} + \text{PP2B} \tag{550}$$
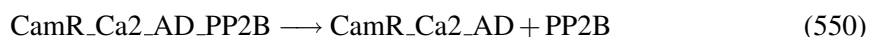
Reactant

Table 444: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	

Products

Table 445: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{220} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca2\_AD\_PP2B}] \tag{551}$$

10.221 Reaction `reaction_215`

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

Name PP2B dissociating from CamR_Ca2_BC

Reaction equation

$$\text{CamR\_Ca2\_BC\_PP2B} \longrightarrow \text{CamR\_Ca2\_BC} + \text{PP2B} \tag{552}$$
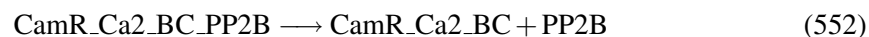
Reactant

Table 446: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

Products

Table 447: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{221} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca2\_BC\_PP2B}] \tag{553}$$

10.222 Reaction `reaction_216`

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

Name PP2B dissociating from CamR_Ca2_BD

Reaction equation

$$\text{CamR\_Ca2\_BD\_PP2B} \longrightarrow \text{CamR\_Ca2\_BD} + \text{PP2B} \tag{554}$$
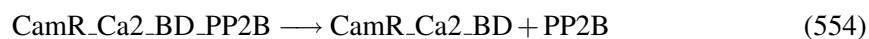
Reactant

Table 448: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Products

Table 449: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	

Id	Name	SBO
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{222} = \mathrm{vol\,(Spine)} \cdot \mathrm{K\_CamR\_PP2B\_off} \cdot [\mathrm{CamR\_Ca2\_BD\_PP2B}] \qquad (555)$$

10.223 Reaction `reaction_217`

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

Name PP2B dissociating from CamR_Ca2_CD

Reaction equation

$$\mathrm{CamR\_Ca2\_CD\_PP2B} \longrightarrow \mathrm{CamR\_Ca2\_CD} + \mathrm{PP2B} \qquad (556)$$
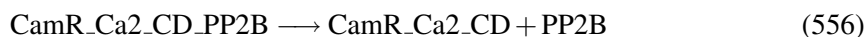
Reactant

Table 450: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Products

Table 451: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{223} = \mathrm{vol\,(Spine)} \cdot \mathrm{K\_CamR\_PP2B\_off} \cdot [\mathrm{CamR\_Ca2\_CD\_PP2B}] \qquad (557)$$

10.224 Reaction `reaction_218`

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

Name PP2B dissociating from CamR_Ca3_ABC

Reaction equation

$$\text{CamR\_Ca3\_ABC\_PP2B} \longrightarrow \text{CamR\_Ca3\_ABC} + \text{PP2B} \tag{558}$$
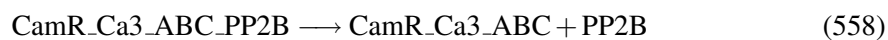
Reactant

Table 452: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Products

Table 453: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{224} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca3\_ABC\_PP2B}] \tag{559}$$

10.225 Reaction `reaction_219`

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

Name PP2B dissociating from CamR_Ca3_ABD

Reaction equation

$$\text{CamR\_Ca3\_ABD\_PP2B} \longrightarrow \text{CamR\_Ca3\_ABD} + \text{PP2B} \tag{560}$$
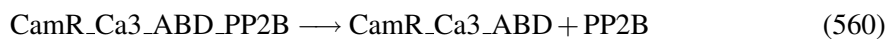
Reactant

Table 454: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Products

Table 455: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{225} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca3\_ABD\_PP2B}] \qquad (561)$$

10.226 Reaction reaction_220

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

Name PP2B dissociating from CamR_Ca3_ACD

Reaction equation

$$\text{CamR\_Ca3\_ACD\_PP2B} \longrightarrow \text{CamR\_Ca3\_ACD} + \text{PP2B} \qquad (562)$$
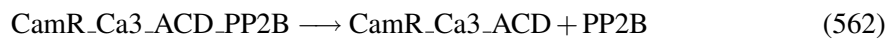
Reactant

Table 456: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Products

Table 457: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{226} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca3\_ACD\_PP2B}] \tag{563}$$

10.227 Reaction `reaction_221`

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

Name PP2B dissociating from CamR_Ca3_BCD

Reaction equation

$$\text{CamR\_Ca3\_BCD\_PP2B} \longrightarrow \text{CamR\_Ca3\_BCD} + \text{PP2B} \tag{564}$$

Reactant

Table 458: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Products

Table 459: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{227} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_off} \cdot [\text{CamR\_Ca3\_BCD\_PP2B}] \tag{565}$$

10.228 Reaction `reaction_222`

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

Name PP2B dissociating from CamR_Ca4_ABCD

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_PP2B} \longrightarrow \text{CamR\_Ca4\_ABCD} + \text{PP2B} \tag{566}$$

Reactant

Table 460: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Products

Table 461: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD PP2B	CamR_Ca4_ABCD PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{228} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_off} \cdot [\mathrm{CamR\_Ca4\_ABCD\_PP2B}] \qquad (567)$$

10.229 Reaction `reaction_223`

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

Name Ca binding to CamR_CamKII site A

Reaction equation

$$\mathrm{CamR\_CaMKII} + \mathrm{Ca} \longrightarrow \mathrm{CamR\_Ca1\_A\_CaMKII} \qquad (568)$$
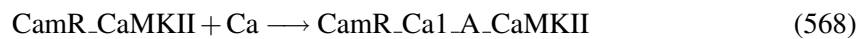
Reactants

Table 462: Properties of each reactant.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	
Ca	Ca	

Product

Table 463: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{229} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_CaMKII}] \cdot [\text{Ca}] \tag{569}$$

10.230 Reaction reaction_224

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

Name Ca binding to CamR_CamKII site B

Reaction equation

$$\text{CamR\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_B\_CaMKII} \tag{570}$$
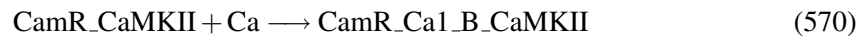
Reactants

Table 464: Properties of each reactant.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	
Ca	Ca	

Product

Table 465: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{230} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_CaMKII}] \cdot [\text{Ca}] \tag{571}$$

10.231 Reaction `reaction_225`

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

Name Ca binding to CamR_CamKII site C

Reaction equation

$$\text{CamR\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_C\_CaMKII} \tag{572}$$
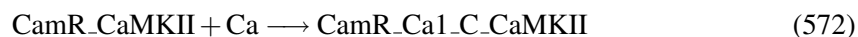
Reactants

Table 466: Properties of each reactant.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	
Ca	Ca	

Product

Table 467: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{231} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_CaMKII}] \cdot [\text{Ca}] \tag{573}$$

10.232 Reaction `reaction_226`

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

Name Ca binding to CamR_CamKII site D

Reaction equation

$$\text{CamR\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_D\_CaMKII} \tag{574}$$
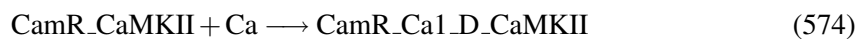
Reactants

Table 468: Properties of each reactant.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	
Ca	Ca	

Product

Table 469: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{232} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_CaMKII}] \cdot [\text{Ca}] \tag{575}$$

10.233 Reaction reaction_227

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

Name Ca dissociating from CamR_Ca1_CamKII site A

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKII} \longrightarrow \text{CamR\_CaMKII} + \text{Ca} \tag{576}$$

Reactant

Table 470: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	

Products

Table 471: Properties of each product.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{233} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca1\_A\_CaMKII}] \tag{577}$$

10.234 Reaction `reaction_228`

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

Name Ca dissociating from CamR_Ca1_CamKII site C

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKII} \longrightarrow \text{CamR\_CaMKII} + \text{Ca} \tag{578}$$

Reactant

Table 472: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	

Products

Table 473: Properties of each product.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{234} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca1\_C\_CaMKII}] \tag{579}$$

10.235 Reaction `reaction_229`

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

Name Ca dissociating from CamR_Ca1_CamKII site D

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKII} \longrightarrow \text{CamR\_CaMKII} + \text{Ca} \tag{580}$$

Reactant

Table 474: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	

Products

Table 475: Properties of each product.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{235} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot \left[\text{CamR\_Ca1\_D\_CaMKII}\right] \tag{581}$$

10.236 Reaction `reaction_230`

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

Name Ca binding to CamR_Ca1_A_CamKII site B

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKII} \tag{582}$$

Reactants

Table 476: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	

Id	Name	SBO
Ca	Ca	

Product

Table 477: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{236} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A\_CaMKII}] \cdot [\text{Ca}] \qquad (583)$$

10.237 Reaction `reaction_231`

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

Name Ca binding to CamR_Ca1_A_CamKII site C

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKII} \qquad (584)$$

Reactants

Table 478: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	
Ca	Ca	

Product

Table 479: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{237} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A\_CaMKII}] \cdot [\text{Ca}] \qquad (585)$$

10.238 Reaction `reaction_232`

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

Name Ca binding to CamR_Ca1_A_CamKII site D

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKII} \qquad (586)$$

Reactants

Table 480: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	
Ca	Ca	

Product

Table 481: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{238} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A\_CaMKII}] \cdot [\text{Ca}] \qquad (587)$$

10.239 Reaction `reaction_233`

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

Name Ca binding to CamR_Ca1_B_CamKII site A

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKII} \qquad (588)$$

Reactants

Table 482: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	
Ca	Ca	

Product

Table 483: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{239} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B\_CaMKII}] \cdot [\text{Ca}] \qquad (589)$$

10.240 Reaction `reaction_234`

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

Name Ca binding to CamR_Ca1_B_CamKII site C

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKII} \qquad (590)$$

Reactants

Table 484: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	
Ca	Ca	

Product

Table 485: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{240} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B\_CaMKII}] \cdot [\text{Ca}] \tag{591}$$

10.241 Reaction `reaction_235`

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

Name Ca binding to CamR_Ca1_B_CamKII site D

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKII} \tag{592}$$

Reactants

Table 486: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	
Ca	Ca	

Product

Table 487: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{241} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B\_CaMKII}] \cdot [\text{Ca}] \tag{593}$$

10.242 Reaction `reaction_236`

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

Name Ca binding to CamR_Ca1_C_CamKII site A

Reaction equation

$$CamR\_Ca1\_C\_CaMKII + Ca \longrightarrow CamR\_Ca2\_AC\_CaMKII \tag{594}$$

Reactants

Table 488: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	
Ca	Ca	

Product

Table 489: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{242} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_Cam\_Ca\_on \cdot [CamR\_Ca1\_C\_CaMKII] \cdot [Ca] \tag{595}$$

10.243 Reaction `reaction_237`

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

Name Ca binding to CamR_Ca1_C_CamKII site B

Reaction equation

$$CamR\_Ca1\_C\_CaMKII + Ca \longrightarrow CamR\_Ca2\_BC\_CaMKII \tag{596}$$

Reactants

Table 490: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	
Ca	Ca	

Product

Table 491: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{243} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_C\_CaMKII}] \cdot [\text{Ca}] \qquad (597)$$

10.244 Reaction `reaction_238`

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

Name Ca binding to CamR_Ca1_C_CamKII site D

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKII} \qquad (598)$$

Reactants

Table 492: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	
Ca	Ca	

Product

Table 493: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{244} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_C\_CaMKII}] \cdot [\text{Ca}] \tag{599}$$

10.245 Reaction `reaction_239`

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

Name Ca binding to CamR_Ca1_D_CamKII site A

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKII} \tag{600}$$

Reactants

Table 494: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	
Ca	Ca	

Product

Table 495: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{245} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D\_CaMKII}] \cdot [\text{Ca}] \tag{601}$$

10.246 Reaction `reaction_240`

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

Name Ca binding to CamR_Ca1_D_CamKII site B

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKII} \tag{602}$$

Reactants

Table 496: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	
Ca	Ca	

Product

Table 497: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{246} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D\_CaMKII}] \cdot [\text{Ca}] \tag{603}$$

10.247 Reaction `reaction_241`

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

Name Ca binding to CamR_Ca1_D_CamKII site C

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKII} \tag{604}$$

Reactants

Table 498: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	
Ca	Ca	

Product

Table 499: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{247} = \mathrm{vol}\left(\mathrm{Spine}\right) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot \left[\mathrm{CamR\_Ca1\_D\_CaMKII}\right] \cdot \left[\mathrm{Ca}\right] \qquad (605)$$

10.248 Reaction `reaction_242`

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

Name Ca dissociating from CamR_Ca2_AB_CamKII site A

Reaction equation

$$\mathrm{CamR\_Ca2\_AB\_CaMKII} \longrightarrow \mathrm{CamR\_Ca1\_B\_CaMKII} + \mathrm{Ca} \qquad (606)$$
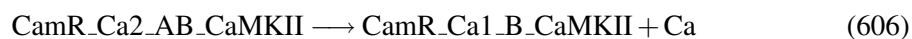
Reactant

Table 500: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	

Products

Table 501: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{248} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AB\_CaMKII}] \tag{607}$$

10.249 Reaction `reaction_243`

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

Name Ca dissociating from CamR_Ca2_AB_CamKII site B

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKII} \longrightarrow \text{CamR\_Ca1\_A\_CaMKII} + \text{Ca} \tag{608}$$

Reactant

Table 502: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	

Products

Table 503: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{249} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca2\_AB\_CaMKII}] \tag{609}$$

10.250 Reaction `reaction_244`

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

Name Ca dissociating from CamR_Ca2_AC_CamKII site A

Reaction equation

$$CamR\_Ca2\_AC\_CaMKII \longrightarrow CamR\_Ca1\_C\_CaMKII + Ca \qquad (610)$$
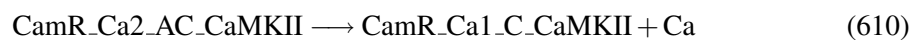
Reactant

Table 504: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	

Products

Table 505: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{250} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_CamR\_Ca\_A\_off \cdot [CamR\_Ca2\_AC\_CaMKII] \qquad (611)$$

10.251 Reaction `reaction_245`

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

Name Ca dissociating from CamR_Ca2_AC_CamKII site C

Reaction equation

$$CamR\_Ca2\_AC\_CaMKII \longrightarrow CamR\_Ca1\_A\_CaMKII + Ca \qquad (612)$$
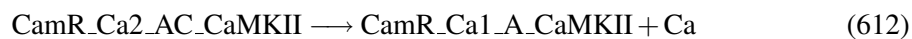
Reactant

Table 506: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	

Products

Table 507: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{251} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_AC\_CaMKII}] \qquad (613)$$

10.252 Reaction reaction_246

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

Name Ca dissociating from CamR_Ca2_AD_CamKII site A

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKII} \longrightarrow \text{CamR\_Ca1\_D\_CaMKII} + \text{Ca} \qquad (614)$$
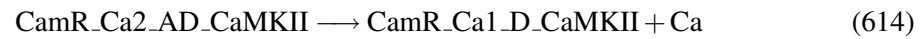
Reactant

Table 508: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	

Products

Table 509: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{252} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot \left[\text{CamR\_Ca2\_AD\_CaMKII}\right] \qquad (615)$$

10.253 Reaction `reaction_247`

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

Name Ca dissociating from CamR_Ca2_AD_CamKII site D

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKII} \longrightarrow \text{CamR\_Ca1\_A\_CaMKII} + \text{Ca} \qquad (616)$$
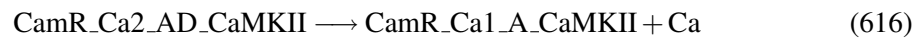
Reactant

Table 510: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	

Products

Table 511: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{253} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot \left[\text{CamR\_Ca2\_AD\_CaMKII}\right] \qquad (617)$$

10.254 Reaction `reaction_248`

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

Name Ca dissociating from CamR_Ca2_BC_CamKII site B

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKII} \longrightarrow \text{CamR\_Ca1\_C\_CaMKII} + \text{Ca} \qquad (618)$$
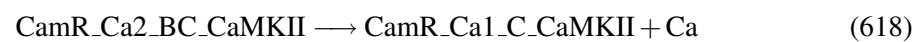
Reactant

Table 512: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Products

Table 513: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{254} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot \left[\text{CamR\_Ca2\_BC\_CaMKII}\right] \qquad (619)$$

10.255 Reaction `reaction_249`

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

Name Ca dissociating from CamR_Ca2_BC_CamKII site C

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKII} \longrightarrow \text{CamR\_Ca1\_B\_CaMKII} + \text{Ca} \qquad (620)$$

Reactant

Table 514: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Products

Table 515: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{255} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_BC\_CaMKII}] \tag{621}$$

10.256 Reaction `reaction_250`

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

Name Ca dissociating from CamR_Ca2_BD_CamKII site B

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKII} \longrightarrow \text{CamR\_Ca1\_D\_CaMKII} + \text{Ca} \tag{622}$$

Reactant

Table 516: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	

Products

Table 517: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{256} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca2\_BD\_CaMKII}] \tag{623}$$

10.257 Reaction `reaction_251`

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

Name Ca dissociating from CamR_Ca2_BD_CamKII site D

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKII} \longrightarrow \text{CamR\_Ca1\_B\_CaMKII} + \text{Ca} \qquad (624)$$

Reactant

Table 518: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	

Products

Table 519: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{257} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_BD\_CaMKII}] \qquad (625)$$

10.258 Reaction `reaction_252`

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

Name Ca dissociating from CamR_Ca2_CD_CamKII site C

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKII} \longrightarrow \text{CamR\_Ca1\_D\_CaMKII} + \text{Ca} \qquad (626)$$
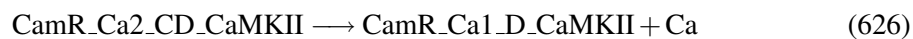
Reactant

Table 520: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	

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Products

Table 521: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{258} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_CD\_CaMKII}] \qquad (627)$$

10.259 Reaction reaction_253

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

Name Ca dissociating from CamR_Ca2_CD_CamKII site D

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKII} \longrightarrow \text{CamR\_Ca1\_C\_CaMKII} + \text{Ca} \qquad (628)$$
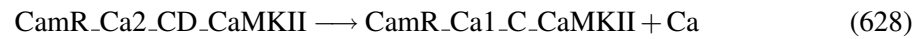
Reactant

Table 522: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	

Products

Table 523: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{259} = \text{vol}(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_CD\_CaMKII}] \tag{629}$$

10.260 Reaction `reaction_254`

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

Name Ca binding to CamR_Ca2_AB_CamKII site C

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKII} \tag{630}$$

Reactants

Table 524: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	
Ca	Ca	

Product

Table 525: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{260} = \text{vol}(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AB\_CaMKII}] \cdot [\text{Ca}] \tag{631}$$

10.261 Reaction `reaction_255`

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

Name Ca binding to CamR_Ca2_AB_CamKII site D

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKII} \tag{632}$$

Reactants

Table 526: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	
Ca	Ca	

Product

Table 527: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{261} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AB\_CaMKII}] \cdot [\text{Ca}] \qquad (633)$$

10.262 Reaction `reaction_256`

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

Name Ca binding to CamR_Ca2_AC_CaMKII site B

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKII} \qquad (634)$$

Reactants

Table 528: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	
Ca	Ca	

Product

Table 529: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{262} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AC\_CaMKII}] \cdot [\text{Ca}] \qquad (635)$$

10.263 Reaction reaction_257

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

Name Ca binding to CamR_Ca2_AC_CamKII site D

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKII} \qquad (636)$$

Reactants

Table 530: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	
Ca	Ca	

Product

Table 531: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{263} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AC\_CaMKII}] \cdot [\text{Ca}] \qquad (637)$$

10.264 Reaction `reaction_258`

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

Name Ca binding to CamR_Ca2_AD_CamKII site B

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKII} \tag{638}$$

Reactants

Table 532: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	
Ca	Ca	

Product

Table 533: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{264} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AD\_CaMKII}] \cdot [\text{Ca}] \tag{639}$$

10.265 Reaction `reaction_259`

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

Name Ca binding to CamR_Ca2_AD_CamKII site C

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKII} \tag{640}$$

Reactants

Table 534: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	
Ca	Ca	

Product

Table 535: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{265} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamR\_Ca2\_AD\_CaMKII}] \cdot [\mathrm{Ca}] \qquad (641)$$

10.266 Reaction reaction_260

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

Name Ca binding to CamR_Ca2_BC_CamKII site A

Reaction equation

$$\mathrm{CamR\_Ca2\_BC\_CaMKII} + \mathrm{Ca} \longrightarrow \mathrm{CamR\_Ca3\_ABC\_CaMKII} \qquad (642)$$

Reactants

Table 536: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	
Ca	Ca	

Product

Table 537: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{266} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BC\_CaMKII}] \cdot [\text{Ca}] \tag{643}$$

10.267 Reaction reaction_261

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

Name Ca binding to CamR_Ca2_BC_CamKII site D

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKII} \tag{644}$$

Reactants

Table 538: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	
Ca	Ca	

Product

Table 539: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{267} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BC\_CaMKII}] \cdot [\text{Ca}] \tag{645}$$

10.268 Reaction `reaction_262`

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

Name Ca binding to CamR_Ca2_BD_CamKII site A

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKII} \tag{646}$$

Reactants

Table 540: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	
Ca	Ca	

Product

Table 541: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{268} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BD\_CaMKII}] \cdot [\text{Ca}] \tag{647}$$

10.269 Reaction `reaction_263`

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

Name Ca binding to CamR_Ca2_BD_CamKII site C

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKII} \tag{648}$$

Reactants

Table 542: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	
Ca	Ca	

Product

Table 543: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{269} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BD\_CaMKII}] \cdot [\text{Ca}] \qquad (649)$$

10.270 Reaction `reaction_264`

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

Name Ca binding to CamR_Ca2_CD_CamKII site A

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKII} \qquad (650)$$

Reactants

Table 544: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	
Ca	Ca	

Product

Table 545: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{270} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_CD\_CaMKII}] \cdot [\text{Ca}] \tag{651}$$

10.271 Reaction reaction_265

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

Name Ca binding to CamR_Ca2_CD_CamKII site B

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKII} \tag{652}$$

Reactants

Table 546: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	
Ca	Ca	

Product

Table 547: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{271} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_CD\_CaMKII}] \cdot [\text{Ca}] \tag{653}$$

10.272 Reaction `reaction_266`

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

Name Ca dissociating from CamR_Ca3_ABC_CamKII site C

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKII} + \text{Ca} \tag{654}$$

Reactant

Table 548: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Products

Table 549: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{272} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_ABC\_CaMKII}] \tag{655}$$

10.273 Reaction `reaction_267`

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

Name Ca dissociating from CamR_Ca3_ABC_CamKII site B

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKII} + \text{Ca} \tag{656}$$

Reactant

Table 550: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Products

Table 551: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{273} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca3\_ABC\_CaMKII}] \qquad (657)$$

10.274 Reaction `reaction_268`

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

Name Ca dissociating from CamR_Ca3_ABC_CamKII site A

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKII} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKII} + \text{Ca} \qquad (658)$$

Reactant

Table 552: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Products

Table 553: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{274} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ABC\_CaMKII}] \tag{659}$$

10.275 Reaction `reaction_269`

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

Name Ca dissociating from CamR_Ca3_ABD_CamKII site D

Reaction equation

$$\text{CamR\_Ca3\_ABD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKII} + \text{Ca} \tag{660}$$

Reactant

Table 554: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Products

Table 555: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{275} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca3\_ABD\_CaMKII}] \tag{661}$$

10.276 Reaction `reaction_270`

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

Name Ca dissociating from CamR_Ca3_ABD_CamKII site B

Reaction equation

$$CamR\_Ca3\_ABD\_CaMKII \longrightarrow CamR\_Ca2\_AD\_CaMKII + Ca \qquad (662)$$

Reactant

Table 556: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Products

Table 557: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{276} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_CamR\_Ca\_B\_off \cdot [CamR\_Ca3\_ABD\_CaMKII] \qquad (663)$$

10.277 Reaction `reaction_271`

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

Name Ca dissociating from CamR_Ca3_ABD_CamKII site A

Reaction equation

$$CamR\_Ca3\_ABD\_CaMKII \longrightarrow CamR\_Ca2\_BD\_CaMKII + Ca \qquad (664)$$

Reactant

Table 558: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Products

Table 559: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{277} = \text{vol}(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ABD\_CaMKII}] \qquad (665)$$

10.278 Reaction reaction_272

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

Name Ca dissociating from CamR_Ca3_ACD_CamKII site D

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKII} + \text{Ca} \qquad (666)$$

Reactant

Table 560: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Products

Table 561: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{278} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca3\_ACD\_CaMKII}] \qquad (667)$$

10.279 Reaction `reaction_273`

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

Name Ca dissociating from CamR_Ca3_ACD_CamKII site C

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKII} + \text{Ca} \qquad (668)$$

Reactant

Table 562: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Products

Table 563: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{279} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_ACD\_CaMKII}] \qquad (669)$$

10.280 Reaction `reaction_274`

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

Name Ca dissociating from CamR_Ca3_ACD_CamKII site A

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKII} + \text{Ca} \qquad (670)$$

Reactant

Table 564: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Products

Table 565: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{280} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_A\_off} \cdot [\mathrm{CamR\_Ca3\_ACD\_CaMKII}] \qquad (671)$$

10.281 Reaction `reaction_275`

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

Name Ca dissociating from CamR_Ca3_BCD_CamKII site D

Reaction equation

$$\mathrm{CamR\_Ca3\_BCD\_CaMKII} \longrightarrow \mathrm{CamR\_Ca2\_BC\_CaMKII} + \mathrm{Ca} \qquad (672)$$

Reactant

Table 566: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Products

Table 567: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{281} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca3\_BCD\_CaMKII}] \qquad (673)$$

10.282 Reaction reaction_276

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

Name Ca dissociating from CamR_Ca3_BCD_CamKII site C

Reaction equation

$$\text{CamR\_Ca3\_BCD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKII} + \text{Ca} \qquad (674)$$

Reactant

Table 568: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Products

Table 569: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{282} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_BCD\_CaMKII}] \qquad (675)$$

10.283 Reaction reaction_277

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

Name Ca dissociating from CamR_Ca3_BCD_CamKII site B

Reaction equation

$$CamR\_Ca3\_BCD\_CaMKII \longrightarrow CamR\_Ca2\_CD\_CaMKII + Ca \qquad (676)$$

Reactant

Table 570: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Products

Table 571: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{283} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_CamR\_Ca\_B\_off \cdot [CamR\_Ca3\_BCD\_CaMKII] \qquad (677)$$

10.284 Reaction `reaction_278`

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

Name Ca binding to CamR_Ca3_BCD_CamKII site A

Reaction equation

$$CamR\_Ca3\_BCD\_CaMKII + Ca \longrightarrow CamR\_Ca4\_ABCD\_CaMKII \qquad (678)$$

Reactants

Table 572: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Id	Name	SBO
Ca	Ca	

Product

Table 573: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{284} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_BCD\_CaMKII}] \cdot [\text{Ca}] \tag{679}$$

10.285 Reaction `reaction_279`

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

Name Ca binding to CamR_Ca3_ACD_CamKII site B

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKII} \tag{680}$$

Reactants

Table 574: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	
Ca	Ca	

Product

Table 575: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{285} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ACD\_CaMKII}] \cdot [\text{Ca}] \qquad (681)$$

10.286 Reaction reaction_280

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

Name Ca binding to CamR_Ca3_ABD_CamKII site C

Reaction equation

$$\text{CamR\_Ca3\_ABD\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKII} \qquad (682)$$

Reactants

Table 576: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	
Ca	Ca	

Product

Table 577: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{286} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ABD\_CaMKII}] \cdot [\text{Ca}] \qquad (683)$$

10.287 Reaction reaction_281

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

Name Ca binding to CamR_Ca3_ABC_CamKII site D

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKII} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKII} \qquad (684)$$

Reactants

Table 578: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	
Ca	Ca	

Product

Table 579: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Kinetic Law

Derived unit contains undeclared units

$$v_{287} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ABC\_CaMKII}] \cdot [\text{Ca}] \qquad (685)$$

10.288 Reaction `reaction_282`

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

Name Ca dissociating from CamR_Ca4_ABCD_CamKII site A

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKII} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKII} + \text{Ca} \qquad (686)$$

Reactant

Table 580: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Products

Table 581: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{288} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKII}] \qquad (687)$$

10.289 Reaction `reaction_283`

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

Name Ca dissociating from CamR_Ca4_ABCD_CamKII site B

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKII} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKII} + \text{Ca} \qquad (688)$$

Reactant

Table 582: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Products

Table 583: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{289} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKII}] \qquad (689)$$

10.290 Reaction `reaction_284`

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

Name Ca dissociating from CamR_Ca4_ABCD_CamKII site C

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKII} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKII} + \text{Ca} \qquad (690)$$

Reactant

Table 584: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Products

Table 585: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{290} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKII}] \qquad (691)$$

10.291 Reaction `reaction_285`

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

Name Ca dissociating from CamR_Ca4_ABCD_CamKII site D

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKII} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKII} + \text{Ca} \qquad (692)$$

Reactant

Table 586: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Products

Table 587: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{291} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKII}] \qquad (693)$$

10.292 Reaction reaction_286

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

Name Ca binding to CamR_PP2B site A

Reaction equation

$$\text{CamR\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_A\_PP2B} \qquad (694)$$

Reactants

Table 588: Properties of each reactant.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	
Ca	Ca	

Product

Table 589: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{292} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_PP2B}] \cdot [\text{Ca}] \tag{695}$$

10.293 Reaction reaction_287

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

Name Ca binding to CamR_PP2B site B

Reaction equation

$$\text{CamR\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_B\_PP2B} \tag{696}$$

Reactants

Table 590: Properties of each reactant.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	
Ca	Ca	

Product

Table 591: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{293} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_PP2B}] \cdot [\text{Ca}] \tag{697}$$

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10.294 Reaction `reaction_288`

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

Name Ca binding to CamR_PP2B site C

Reaction equation

$$CamR\_PP2B + Ca \longrightarrow CamR\_Ca1\_C\_PP2B \tag{698}$$
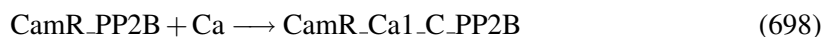
Reactants

Table 592: Properties of each reactant.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	
Ca	Ca	

Product

Table 593: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{294} = \text{vol}\,(\text{Spine}) \cdot K\_Cam\_Ca\_on \cdot [CamR\_PP2B] \cdot [Ca] \tag{699}$$

10.295 Reaction `reaction_289`

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

Name Ca binding to CamR_PP2B site D

Reaction equation

$$CamR\_PP2B + Ca \longrightarrow CamR\_Ca1\_D\_PP2B \tag{700}$$

Reactants

Table 594: Properties of each reactant.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	
Ca	Ca	

Product

Table 595: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{295} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_PP2B}] \cdot [\text{Ca}] \tag{701}$$

10.296 Reaction `reaction_290`

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

Name Ca dissociating from CamR_Ca1_A_PP2B site A

Reaction equation

$$\text{CamR\_Ca1\_A\_PP2B} \longrightarrow \text{CamR\_PP2B} + \text{Ca} \tag{702}$$

Reactant

Table 596: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	

Products

Table 597: Properties of each product.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{296} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca1\_A\_PP2B}] \tag{703}$$

10.297 Reaction `reaction_291`

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

Name Ca dissociating from CamR_Ca1_B_PP2B site B

Reaction equation

$$\text{CamR\_Ca1\_B\_PP2B} \longrightarrow \text{CamR\_PP2B} + \text{Ca} \tag{704}$$

Reactant

Table 598: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	

Products

Table 599: Properties of each product.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{297} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca1\_B\_PP2B}] \tag{705}$$

10.298 Reaction `reaction_292`

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

Name Ca dissociating from CamR_Ca1_C_PP2B site C

Reaction equation

$$CamR\_Ca1\_C\_PP2B \longrightarrow CamR\_PP2B + Ca \tag{706}$$

Reactant

Table 600: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	

Products

Table 601: Properties of each product.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{298} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_CamR\_Ca\_C\_off \cdot [CamR\_Ca1\_C\_PP2B] \tag{707}$$

10.299 Reaction reaction_293

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

Name Ca dissociating from CamR_Ca1_D_PP2B site D

Reaction equation

$$CamR\_Ca1\_D\_PP2B \longrightarrow CamR\_PP2B + Ca \tag{708}$$

Reactant

Table 602: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	

Products

Table 603: Properties of each product.

Id	Name	SBO
CamR_PP2B	CamR_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{299} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot \left[\text{CamR\_Ca1\_D\_PP2B} \right] \tag{709}$$

10.300 Reaction `reaction_294`

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

Name Ca binding to CamR_Ca1_A_PP2B site B

Reaction equation

$$\text{CamR\_Ca1\_A\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AB\_PP2B} \tag{710}$$
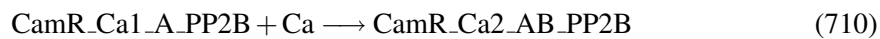
Reactants

Table 604: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	
Ca	Ca	

Product

Table 605: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{300} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A\_PP2B}] \cdot [\text{Ca}] \tag{711}$$

10.301 Reaction `reaction_295`

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

Name Ca binding to CamR_Ca1_A_PP2B site C

Reaction equation

$$\text{CamR\_Ca1\_A\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AC\_PP2B} \tag{712}$$
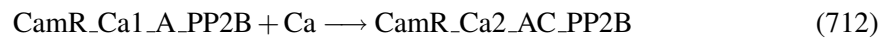
Reactants

Table 606: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	
Ca	Ca	

Product

Table 607: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{301} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A\_PP2B}] \cdot [\text{Ca}] \tag{713}$$

10.302 Reaction `reaction_296`

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

Name Ca binding to CamR_Ca1_A_PP2B site D

Reaction equation

$$\text{CamR\_Ca1\_A\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AD\_PP2B} \tag{714}$$
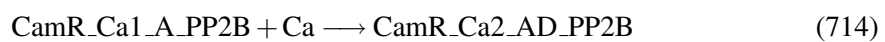
Reactants

Table 608: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	
Ca	Ca	

Product

Table 609: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{302} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A\_PP2B}] \cdot [\text{Ca}] \tag{715}$$

10.303 Reaction reaction_297

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

Name Ca binding to CamR_Ca1_B_PP2B site A

Reaction equation

$$\text{CamR\_Ca1\_B\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AB\_PP2B} \tag{716}$$
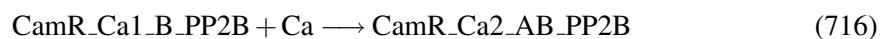
Reactants

Table 610: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	
Ca	Ca	

Product

Table 611: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{303} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B\_PP2B}] \cdot [\text{Ca}] \tag{717}$$

10.304 Reaction `reaction_298`

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

Name Ca binding to CamR_Ca1_B_PP2B site C

Reaction equation

$$\text{CamR\_Ca1\_B\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BC\_PP2B} \tag{718}$$

Reactants

Table 612: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	
Ca	Ca	

Product

Table 613: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{304} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B\_PP2B}] \cdot [\text{Ca}] \tag{719}$$

10.305 Reaction `reaction_299`

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

Name Ca binding to CamR_Ca1_B_PP2B site D

Reaction equation

$$\text{CamR\_Ca1\_B\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BD\_PP2B} \tag{720}$$

Reactants

Table 614: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	
Ca	Ca	

Product

Table 615: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{305} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B\_PP2B}] \cdot [\text{Ca}] \tag{721}$$

10.306 Reaction `reaction_300`

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

Name Ca binding to CamR_Ca1_C_PP2B site A

Reaction equation

$$\text{CamR\_Ca1\_C\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AC\_PP2B} \tag{722}$$

Reactants

Table 616: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	
Ca	Ca	

Product

Table 617: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{306} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_C\_PP2B}] \cdot [\text{Ca}] \tag{723}$$

10.307 Reaction reaction_301

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

Name Ca binding to CamR_Ca1_C_PP2B site B

Reaction equation

$$\text{CamR\_Ca1\_C\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BC\_PP2B} \tag{724}$$
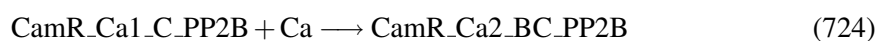
Reactants

Table 618: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	
Ca	Ca	

Product

Table 619: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{307} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_Cam\_Ca\_on} \cdot \left[\text{CamR\_Ca1\_C\_PP2B} \right] \cdot \left[\text{Ca} \right] \tag{725}$$

10.308 Reaction `reaction_302`

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

Name Ca binding to CamR_Ca1_C_PP2B site D

Reaction equation

$$\text{CamR\_Ca1\_C\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_CD\_PP2B} \tag{726}$$
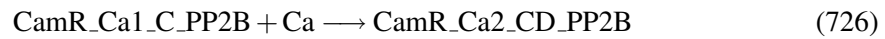
Reactants

Table 620: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	
Ca	Ca	

Product

Table 621: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{308} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_Cam\_Ca\_on} \cdot \left[\text{CamR\_Ca1\_C\_PP2B} \right] \cdot \left[\text{Ca} \right] \tag{727}$$

10.309 Reaction `reaction_303`

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

Name Ca binding to CamR_Ca1_D_PP2B site A

Reaction equation

$$\text{CamR\_Ca1\_D\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AD\_PP2B} \tag{728}$$
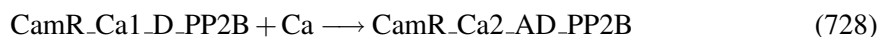
Reactants

Table 622: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	
Ca	Ca	

Product

Table 623: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{309} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D\_PP2B}] \cdot [\text{Ca}] \tag{729}$$

10.310 Reaction `reaction_304`

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

Name Ca binding to CamR_Ca1_D_PP2B site B

Reaction equation

$$\text{CamR\_Ca1\_D\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BD\_PP2B} \tag{730}$$
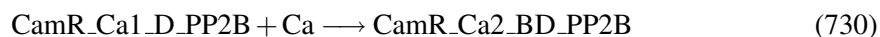
Reactants

Table 624: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	
Ca	Ca	

Product

Table 625: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{310} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D\_PP2B}] \cdot [\text{Ca}] \tag{731}$$

10.311 Reaction reaction_305

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

Name Ca binding to CamR_Ca1_D_PP2B site C

Reaction equation

$$\text{CamR\_Ca1\_D\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_CD\_PP2B} \tag{732}$$
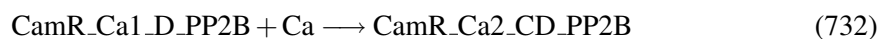
Reactants

Table 626: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	
Ca	Ca	

Product

Table 627: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{311} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D\_PP2B}] \cdot [\text{Ca}] \tag{733}$$

10.312 Reaction reaction_306

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

Name Ca dissociating from CamR_Ca2_AB_PP2B site A

Reaction equation

$$\text{CamR\_Ca2\_AB\_PP2B} \longrightarrow \text{CamR\_Ca1\_B\_PP2B} + \text{Ca} \tag{734}$$
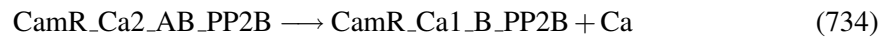
Reactant

Table 628: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Products

Table 629: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{312} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AB\_PP2B}] \tag{735}$$

10.313 Reaction `reaction_307`

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

Name Ca dissociating from CamR_Ca2_AB_PP2B site B

Reaction equation

$$CamR\_Ca2\_AB\_PP2B \longrightarrow CamR\_Ca1\_A\_PP2B + Ca \tag{736}$$

Reactant

Table 630: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Products

Table 631: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{313} = \text{vol}\,(\text{Spine}) \cdot K\_CamR\_Ca\_B\_off \cdot [CamR\_Ca2\_AB\_PP2B] \tag{737}$$

10.314 Reaction `reaction_308`

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

Name Ca dissociating from CamR_Ca2_AC_PP2B site A

Reaction equation

$$CamR\_Ca2\_AC\_PP2B \longrightarrow CamR\_Ca1\_C\_PP2B + Ca \tag{738}$$
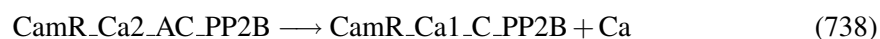
Reactant

Table 632: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Products

Table 633: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{314} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_A\_off} \cdot [\mathrm{CamR\_Ca2\_AC\_PP2B}] \tag{739}$$

10.315 Reaction `reaction_309`

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

Name Ca dissociating from CamR_Ca2_AC_PP2B site C

Reaction equation

$$\mathrm{CamR\_Ca2\_AC\_PP2B} \longrightarrow \mathrm{CamR\_Ca1\_A\_PP2B} + \mathrm{Ca} \tag{740}$$
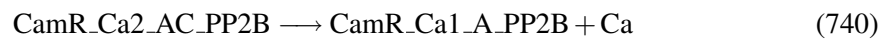
Reactant

Table 634: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Products

Table 635: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{315} = \text{vol}(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_AC\_PP2B}] \qquad (741)$$

10.316 Reaction `reaction_310`

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

Name Ca dissociating from CamR_Ca2_AD_PP2B site A

Reaction equation

$$\text{CamR\_Ca2\_AD\_PP2B} \longrightarrow \text{CamR\_Ca1\_D\_PP2B} + \text{Ca} \qquad (742)$$
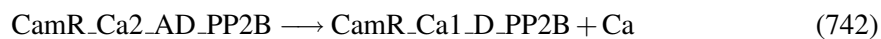
Reactant

Table 636: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	

Products

Table 637: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{316} = \text{vol}(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AD\_PP2B}] \qquad (743)$$

10.317 Reaction `reaction_311`

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

Name Ca dissociating from CamR_Ca2_AD_PP2B site D

Reaction equation

$$CamR\_Ca2\_AD\_PP2B \longrightarrow CamR\_Ca1\_A\_PP2B + Ca \tag{744}$$
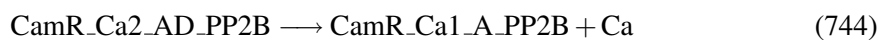
Reactant

Table 638: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	

Products

Table 639: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{317} = \mathrm{vol\,(Spine)} \cdot \mathrm{K\_CamR\_Ca\_D\_off} \cdot [CamR\_Ca2\_AD\_PP2B] \tag{745}$$

10.318 Reaction `reaction_312`

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

Name Ca dissociating from CamR_Ca2_BC_PP2B site B

Reaction equation

$$CamR\_Ca2\_BC\_PP2B \longrightarrow CamR\_Ca1\_C\_PP2B + Ca \tag{746}$$
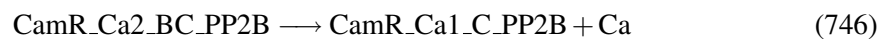
Reactant

Table 640: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

Products

<div align="center">

Table 641: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	
Ca	Ca	

</div>

Kinetic Law

Derived unit contains undeclared units

$$v_{318} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_B\_off} \cdot [\mathrm{CamR\_Ca2\_BC\_PP2B}] \qquad (747)$$

10.319 Reaction `reaction_313`

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

Name Ca dissociating from CamR_Ca2_BC_PP2B site C

Reaction equation

$$\mathrm{CamR\_Ca2\_BC\_PP2B} \longrightarrow \mathrm{CamR\_Ca1\_B\_PP2B} + \mathrm{Ca} \qquad (748)$$
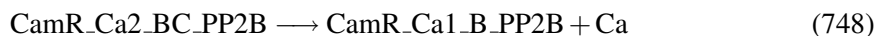
Reactant

<div align="center">

Table 642: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

</div>

Products

<div align="center">

Table 643: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	
Ca	Ca	

</div>

Kinetic Law

Derived unit contains undeclared units

$$v_{319} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot \left[\text{CamR\_Ca2\_BC\_PP2B}\right] \tag{749}$$

10.320 Reaction `reaction_314`

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

Name Ca dissociating from CamR_Ca2_BD_PP2B site B

Reaction equation

$$\text{CamR\_Ca2\_BD\_PP2B} \longrightarrow \text{CamR\_Ca1\_D\_PP2B} + \text{Ca} \tag{750}$$
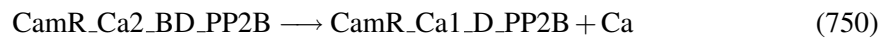
Reactant

Table 644: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Products

Table 645: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{320} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot \left[\text{CamR\_Ca2\_BD\_PP2B}\right] \tag{751}$$

10.321 Reaction `reaction_315`

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

Name Ca dissociating from CamR_Ca2_BD_PP2B site D

Reaction equation

$$\text{CamR\_Ca2\_BD\_PP2B} \longrightarrow \text{CamR\_Ca1\_B\_PP2B} + \text{Ca} \tag{752}$$
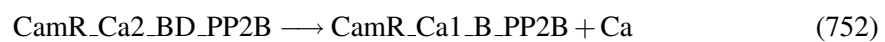
Reactant

Table 646: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Products

Table 647: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{321} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_BD\_PP2B}] \tag{753}$$

10.322 Reaction reaction_316

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

Name Ca dissociating from CamR_Ca2_CD_PP2B site C

Reaction equation

$$\text{CamR\_Ca2\_CD\_PP2B} \longrightarrow \text{CamR\_Ca1\_D\_PP2B} + \text{Ca} \tag{754}$$
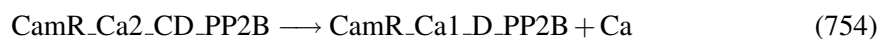
Reactant

Table 648: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Products

Table 649: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{322} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_CD\_PP2B}] \tag{755}$$

10.323 Reaction reaction_317

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

Name Ca dissociating from CamR_Ca2_CD_PP2B site D

Reaction equation

$$\text{CamR\_Ca2\_CD\_PP2B} \longrightarrow \text{CamR\_Ca1\_C\_PP2B} + \text{Ca} \tag{756}$$
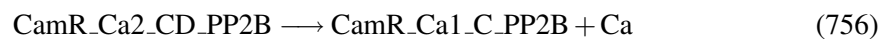
Reactant

Table 650: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Products

Table 651: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{323} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_CD\_PP2B}] \tag{757}$$

10.324 Reaction reaction_318

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

Produced by SBML2LATEX

Name Ca binding to CamR_Ca2_AB_PP2B site C

Reaction equation

$$CamR\_Ca2\_AB\_PP2B + Ca \longrightarrow CamR\_Ca3\_ABC\_PP2B \qquad (758)$$
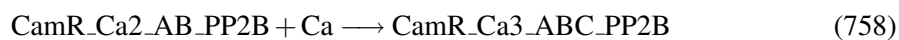
Reactants

Table 652: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	
Ca	Ca	

Product

Table 653: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{324} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_Cam\_Ca\_on \cdot [CamR\_Ca2\_AB\_PP2B] \cdot [Ca] \qquad (759)$$

10.325 Reaction `reaction_319`

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

Name Ca binding to CamR_Ca2_AB_PP2B site D

Reaction equation

$$CamR\_Ca2\_AB\_PP2B + Ca \longrightarrow CamR\_Ca3\_ABD\_PP2B \qquad (760)$$

Reactants

Table 654: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Id	Name	SBO
Ca	Ca	

Product

Table 655: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{325} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AB\_PP2B}] \cdot [\text{Ca}] \tag{761}$$

10.326 Reaction `reaction_320`

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

Name Ca binding to CamR_Ca2_AC_PP2B site B

Reaction equation

$$\text{CamR\_Ca2\_AC\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC\_PP2B} \tag{762}$$

Reactants

Table 656: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	
Ca	Ca	

Product

Table 657: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{326} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AC\_PP2B}] \cdot [\text{Ca}] \tag{763}$$

10.327 Reaction `reaction_321`

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

Name Ca binding to CamR_Ca2_AC_PP2B site D

Reaction equation

$$\text{CamR\_Ca2\_AC\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ACD\_PP2B} \tag{764}$$
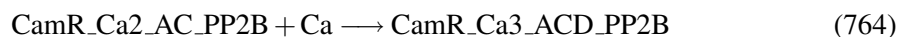
Reactants

Table 658: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	
Ca	Ca	

Product

Table 659: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{327} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AC\_PP2B}] \cdot [\text{Ca}] \tag{765}$$

10.328 Reaction `reaction_322`

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

Name Ca binding to CamR_Ca2_AD_PP2B site B

Reaction equation

$$CamR\_Ca2\_AD\_PP2B + Ca \longrightarrow CamR\_Ca3\_ABD\_PP2B \qquad (766)$$

Reactants

Table 660: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	
Ca	Ca	

Product

Table 661: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{328} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AD\_PP2B}] \cdot [\text{Ca}] \qquad (767)$$

10.329 Reaction `reaction_323`

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

Name Ca binding to CamR_Ca2_AD_PP2B site C

Reaction equation

$$CamR\_Ca2\_AD\_PP2B + Ca \longrightarrow CamR\_Ca3\_ACD\_PP2B \qquad (768)$$

Reactants

Table 662: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	
Ca	Ca	

Product

Table 663: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{329} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AD\_PP2B}] \cdot [\text{Ca}] \tag{769}$$

10.330 Reaction reaction_324

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

Name Ca binding to CamR_Ca2_BC_PP2B site A

Reaction equation

$$\text{CamR\_Ca2\_BC\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC\_PP2B} \tag{770}$$
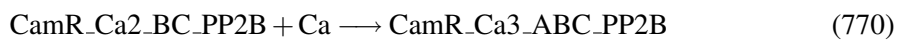
Reactants

Table 664: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	
Ca	Ca	

Product

Table 665: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{330} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BC\_PP2B}] \cdot [\text{Ca}] \tag{771}$$

10.331 Reaction `reaction_325`

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

Name Ca binding to CamR_Ca2_BC_PP2B site D

Reaction equation

$$\text{CamR\_Ca2\_BC\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD\_PP2B} \tag{772}$$
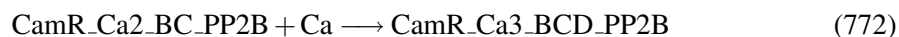
Reactants

Table 666: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	
Ca	Ca	

Product

Table 667: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{331} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BC\_PP2B}] \cdot [\text{Ca}] \tag{773}$$

10.332 Reaction `reaction_326`

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

Name Ca binding to CamR_Ca2_BD_PP2B site A

Reaction equation

$$\text{CamR\_Ca2\_BD\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD\_PP2B} \tag{774}$$
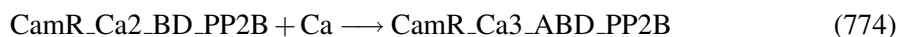
Reactants

Table 668: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	
Ca	Ca	

Product

Table 669: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{332} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BD\_PP2B}] \cdot [\text{Ca}] \tag{775}$$

10.333 Reaction `reaction_327`

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

Name Ca binding to CamR_Ca2_BD_PP2B site C

Reaction equation

$$\text{CamR\_Ca2\_BD\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD\_PP2B} \tag{776}$$
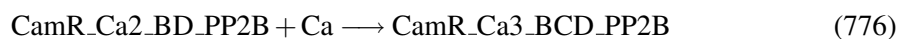
Reactants

Table 670: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	
Ca	Ca	

Product

Table 671: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{333} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BD\_PP2B}] \cdot [\text{Ca}] \qquad (777)$$

10.334 Reaction reaction_328

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

Name Ca binding to CamR_Ca2_CD_PP2B site A

Reaction equation

$$\text{CamR\_Ca2\_CD\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ACD\_PP2B} \qquad (778)$$
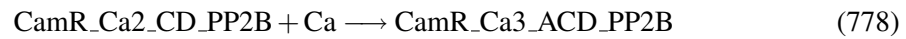
Reactants

Table 672: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	
Ca	Ca	

Product

Table 673: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{334} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_CD\_PP2B}] \cdot [\text{Ca}] \qquad (779)$$

10.335 Reaction `reaction_329`

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

Name Ca binding to CamR_Ca2_CD_PP2B site B

Reaction equation

$$CamR\_Ca2\_CD\_PP2B + Ca \longrightarrow CamR\_Ca3\_BCD\_PP2B \tag{780}$$

Reactants

Table 674: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	
Ca	Ca	

Product

Table 675: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{335} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [CamR\_Ca2\_CD\_PP2B] \cdot [Ca] \tag{781}$$

10.336 Reaction `reaction_330`

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

Name Ca dissociating from CamR_Ca3_ABC_PP2B site A

Reaction equation

$$CamR\_Ca3\_ABC\_PP2B \longrightarrow CamR\_Ca2\_BC\_PP2B + Ca \tag{782}$$

Reactant

Table 676: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Products

Table 677: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{336} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ABC\_PP2B}] \qquad (783)$$

10.337 Reaction reaction_331

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

Name Ca dissociating from CamR_Ca3_ABC_PP2B site B

Reaction equation

$$\text{CamR\_Ca3\_ABC\_PP2B} \longrightarrow \text{CamR\_Ca2\_AC\_PP2B} + \text{Ca} \qquad (784)$$

Reactant

Table 678: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Products

Table 679: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{337} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca3\_ABC\_PP2B}] \qquad (785)$$

10.338 Reaction `reaction_332`

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

Name Ca dissociating from CamR_Ca3_ABC_PP2B site C

Reaction equation

$$\text{CamR\_Ca3\_ABC\_PP2B} \longrightarrow \text{CamR\_Ca2\_AB\_PP2B} + \text{Ca} \qquad (786)$$

Reactant

Table 680: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Products

Table 681: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{338} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_ABC\_PP2B}] \qquad (787)$$

10.339 Reaction `reaction_333`

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

Name Ca dissociating from CamR_Ca3_ABD_PP2B site A

Reaction equation

$$\text{CamR\_Ca3\_ABD\_PP2B} \longrightarrow \text{CamR\_Ca2\_BD\_PP2B} + \text{Ca} \qquad (788)$$

Reactant

Table 682: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Products

Table 683: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{339} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ABD\_PP2B}] \qquad (789)$$

10.340 Reaction `reaction_334`

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

Name Ca dissociating from CamR_Ca3_ABD_PP2B site B

Reaction equation

$$\text{CamR\_Ca3\_ABD\_PP2B} \longrightarrow \text{CamR\_Ca2\_AD\_PP2B} + \text{Ca} \qquad (790)$$

Reactant

Table 684: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Products

Table 685: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{340} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca3\_ABD\_PP2B}] \tag{791}$$

10.341 Reaction `reaction_335`

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

Name Ca dissociating from CamR_Ca3_ABD_PP2B site D

Reaction equation

$$\text{CamR\_Ca3\_ABD\_PP2B} \longrightarrow \text{CamR\_Ca2\_AB\_PP2B} + \text{Ca} \tag{792}$$

Reactant

Table 686: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Products

Table 687: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{341} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca3\_ABD\_PP2B}] \tag{793}$$

10.342 Reaction `reaction_336`

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

Name Ca dissociating from CamR_Ca3_ACD_PP2B site A

Reaction equation

$$\text{CamR\_Ca3\_ACD\_PP2B} \longrightarrow \text{CamR\_Ca2\_CD\_PP2B} + \text{Ca} \tag{794}$$

Reactant

Table 688: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Products

Table 689: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{342} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ACD\_PP2B}] \tag{795}$$

10.343 Reaction `reaction_337`

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

Name Ca dissociating from CamR_Ca3_ACD_PP2B site C

Reaction equation

$$\text{CamR\_Ca3\_ACD\_PP2B} \longrightarrow \text{CamR\_Ca2\_AD\_PP2B} + \text{Ca} \tag{796}$$

Reactant

Table 690: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Products

Table 691: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{343} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_ACD\_PP2B}] \qquad (797)$$

10.344 Reaction `reaction_338`

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

Name Ca dissociating from CamR_Ca3_ACD_PP2B site D

Reaction equation

$$\text{CamR\_Ca3\_ACD\_PP2B} \longrightarrow \text{CamR\_Ca2\_AC\_PP2B} + \text{Ca} \qquad (798)$$

Reactant

Table 692: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Products

Table 693: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{344} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca3\_ACD\_PP2B}] \qquad (799)$$

10.345 Reaction reaction_339

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

Name Ca dissociating from CamR_Ca3_BCD_PP2B site B

Reaction equation

$$\text{CamR\_Ca3\_BCD\_PP2B} \longrightarrow \text{CamR\_Ca2\_CD\_PP2B} + \text{Ca} \qquad (800)$$

Reactant

Table 694: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Products

Table 695: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{345} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca3\_BCD\_PP2B}] \qquad (801)$$

10.346 Reaction reaction_340

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

Name Ca dissociating from CamR_Ca3_BCD_PP2B site C

Reaction equation

$$\text{CamR\_Ca3\_BCD\_PP2B} \longrightarrow \text{CamR\_Ca2\_BD\_PP2B} + \text{Ca} \tag{802}$$
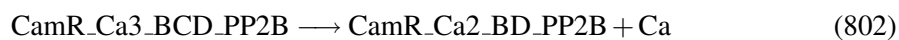
Reactant

Table 696: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Products

Table 697: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{346} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_BCD\_PP2B}] \tag{803}$$

10.347 Reaction `reaction_341`

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

Name Ca dissociating from CamR_Ca3_BCD_PP2B site D

Reaction equation

$$\text{CamR\_Ca3\_BCD\_PP2B} \longrightarrow \text{CamR\_Ca2\_BC\_PP2B} + \text{Ca} \tag{804}$$
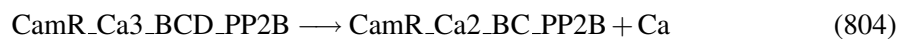
Reactant

Table 698: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Products

Table 699: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{347} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca3\_BCD\_PP2B}] \tag{805}$$

10.348 Reaction `reaction_342`

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

Name Ca binding to CamR_Ca3_ABC_PP2B site D

Reaction equation

$$\text{CamR\_Ca3\_ABC\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_PP2B} \tag{806}$$

Reactants

Table 700: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	
Ca	Ca	

Product

Table 701: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

Produced by SBML2LATEX

$$v_{348} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ABC\_PP2B}] \cdot [\text{Ca}] \qquad (807)$$

10.349 Reaction `reaction_343`

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

Name Ca binding to CamR_Ca3_ABD_PP2B site C

Reaction equation

$$\text{CamR\_Ca3\_ABD\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_PP2B} \qquad (808)$$

Reactants

Table 702: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	
Ca	Ca	

Product

Table 703: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{349} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ABD\_PP2B}] \cdot [\text{Ca}] \qquad (809)$$

10.350 Reaction `reaction_344`

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

Name Ca binding to CamR_Ca3_ACD_PP2B site B

Reaction equation

$$\text{CamR\_Ca3\_ACD\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_PP2B} \qquad (810)$$

Reactants

Table 704: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	
Ca	Ca	

Product

Table 705: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{350} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ACD\_PP2B}] \cdot [\text{Ca}] \tag{811}$$

10.351 Reaction reaction_345

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

Name Ca binding to CamR_Ca3_BCD_PP2B site A

Reaction equation

$$\text{CamR\_Ca3\_BCD\_PP2B} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_PP2B} \tag{812}$$

Reactants

Table 706: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	
Ca	Ca	

Product

Table 707: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{351} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamR\_Ca3\_BCD\_PP2B}] \cdot [\mathrm{Ca}] \qquad (813)$$

10.352 Reaction reaction_346

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

Name Ca dissociating from CamR_Ca4_ABCD_PP2B site A

Reaction equation

$$\mathrm{CamR\_Ca4\_ABCD\_PP2B} \longrightarrow \mathrm{CamR\_Ca3\_BCD\_PP2B} + \mathrm{Ca} \qquad (814)$$

Reactant

Table 708: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Products

Table 709: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{352} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_A\_off} \cdot [\mathrm{CamR\_Ca4\_ABCD\_PP2B}] \qquad (815)$$

10.353 Reaction `reaction_347`

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

Name Ca dissociating from CamR_Ca4_ABCD_PP2B site B

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_PP2B} \longrightarrow \text{CamR\_Ca3\_ACD\_PP2B} + \text{Ca} \tag{816}$$

Reactant

Table 710: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Products

Table 711: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{353} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca4\_ABCD\_PP2B}] \tag{817}$$

10.354 Reaction `reaction_348`

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

Name Ca dissociating from CamR_Ca4_ABCD_PP2B site C

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_PP2B} \longrightarrow \text{CamR\_Ca3\_ABD\_PP2B} + \text{Ca} \tag{818}$$

Reactant

Table 712: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Products

Table 713: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{354} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca4\_ABCD\_PP2B}] \tag{819}$$

10.355 Reaction reaction_349

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

Name Ca dissociating from CamR_Ca4_ABCD_PP2B site D

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_PP2B} \longrightarrow \text{CamR\_Ca3\_ABC\_PP2B} + \text{Ca} \tag{820}$$

Reactant

Table 714: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Products

Table 715: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{355} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca4\_ABCD\_PP2B}] \tag{821}$$

10.356 Reaction `reaction_350`

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

Name Ca dissociating from CamR_Ca1_CamKII site B

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKII} \longrightarrow \text{CamR\_CaMKII} + \text{Ca} \tag{822}$$

Reactant

Table 716: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	

Products

Table 717: Properties of each product.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{356} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca1\_B\_CaMKII}] \tag{823}$$

10.357 Reaction `reaction_351`

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

Name Ca dissociating from CamT_Ca3_ABC site C

Reaction equation

$$\text{CamT\_Ca3\_ABC} \longrightarrow \text{CamT\_Ca2\_AB} + \text{Ca} \qquad (824)$$
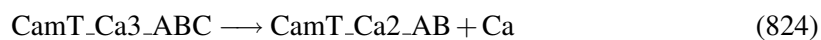
Reactant

Table 718: Properties of each reactant.

Id	Name	SBO
CamT_Ca3_ABC	CamT_Ca3_ABC	

Products

Table 719: Properties of each product.

Id	Name	SBO
CamT_Ca2_AB	CamT_Ca2_AB	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{357} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamT\_Ca\_C\_off} \cdot [\text{CamT\_Ca3\_ABC}] \qquad (825)$$

10.358 Reaction `reaction_352`

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

Name CamR_CaMKII Phosphorylation

Reaction equation

$$\text{CamR\_CaMKII} \longrightarrow \text{CamR\_CaMKIIp} \qquad (826)$$

Reactant

Table 720: Properties of each reactant.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	

Product

Table 721: Properties of each product.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{358} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_CaMKII}] \quad (827)$$

10.359 Reaction `reaction_353`

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

Name CamR_Ca1_A_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKII} \longrightarrow \text{CamR\_Ca1\_A\_CaMKIIp} \quad (828)$$
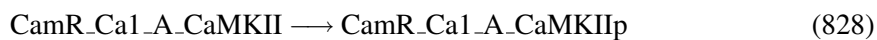
Reactant

Table 722: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKII	CamR_Ca1_A_CaMKII	

Product

Table 723: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{359} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca1\_A\_CaMKII}] \quad (829)$$

10.360 Reaction `reaction_354`

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

Name CamR_Ca1_B_CaMKII Phosphorylation

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKII} \longrightarrow \text{CamR\_Ca1\_B\_CaMKIIp} \tag{830}$$

Reactant

Table 724: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKII	CamR_Ca1_B_CaMKII	

Product

Table 725: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{360} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca1\_B\_CaMKII}] \tag{831}$$

10.361 Reaction `reaction_355`

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

Name CamR_Ca1_C_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKII} \longrightarrow \text{CamR\_Ca1\_C\_CaMKIIp} \tag{832}$$

Reactant

Table 726: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	

Product

Table 727: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{361} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca1\_C\_CaMKII}] \quad (833)$$

10.362 Reaction `reaction_356`

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

Name CamR_Ca1_D_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKII} \longrightarrow \text{CamR\_Ca1\_D\_CaMKIIp} \quad (834)$$

Reactant

Table 728: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKII	CamR_Ca1_D_CaMKII	

Product

Table 729: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{362} = \text{vol}(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca1\_D\_CaMKII}] \quad (835)$$

10.363 Reaction `reaction_357`

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

Name CamR_Ca2_AB_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKIIp} \quad (836)$$

Reactant

Table 730: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	

Product

Table 731: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{363} = \text{vol}(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca2\_AB\_CaMKII}] \quad (837)$$

10.364 Reaction `reaction_358`

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

Name CamR_Ca2_AC_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKIIp} \quad (838)$$

Reactant

Table 732: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKII	CamR_Ca2_AC_CaMKII	

Product

Table 733: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{364} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca2\_AC\_CaMKII}] \quad (839)$$

10.365 Reaction `reaction_359`

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

Name CamR_Ca2_AD_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKIIp} \quad (840)$$
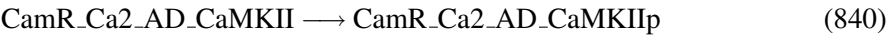
Reactant

Table 734: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKII	CamR_Ca2_AD_CaMKII	

Product

Table 735: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{365} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca2\_AD\_CaMKII}] \quad (841)$$

10.366 Reaction reaction_360

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

Name CamR_Ca2_BC_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKII} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKIIp} \quad (842)$$

Reactant

Table 736: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKII	CamR_Ca2_BC_CaMKII	

Product

Table 737: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{366} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca2\_BC\_CaMKII}] \quad (843)$$

10.367 Reaction `reaction_361`

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

Name CamR_Ca2_BD_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKIIp} \qquad (844)$$

Reactant

Table 738: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	

Product

Table 739: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{367} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca2\_BD\_CaMKII}] \quad (845)$$

10.368 Reaction `reaction_362`

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

Name CamR_Ca2_CD_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKII} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKIIp} \qquad (846)$$

Reactant

Table 740: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKII	CamR_Ca2_CD_CaMKII	

Product

Table 741: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{368} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca2\_CD\_CaMKII}] \quad (847)$$

10.369 Reaction reaction_363

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

Name CamR_Ca3_ABC_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKII} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKIIp} \quad (848)$$

Reactant

Table 742: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Product

Table 743: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{369} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CaMKII\_autoPhosphorylation} \cdot [\mathrm{CamR\_Ca3\_ABC\_CaMKII}] \quad (849)$$

10.370 Reaction `reaction_364`

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

Name CamR_Ca3_ABD_CaMKII phosphorylation

Reaction equation

$$\mathrm{CamR\_Ca3\_ABD\_CaMKII} \longrightarrow \mathrm{CamR\_Ca3\_ABD\_CaMKIIp} \quad (850)$$

Reactant

Table 744: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII	CamR_Ca3_ABD_CaMKII	

Product

Table 745: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{370} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CaMKII\_autoPhosphorylation} \cdot [\mathrm{CamR\_Ca3\_ABD\_CaMKII}] \quad (851)$$

10.371 Reaction `reaction_365`

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

Name CamR_Ca3_ACD_CaMKII phosphorylation

Reaction equation

$$\mathrm{CamR\_Ca3\_ACD\_CaMKII} \longrightarrow \mathrm{CamR\_Ca3\_ACD\_CaMKIIp} \quad (852)$$

Reactant

Table 746: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII	CamR_Ca3_ACD_CaMKII	

Product

Table 747: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Kinetic Law
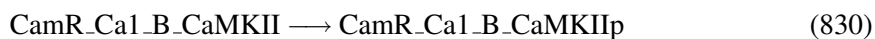
Derived unit contains undeclared units

$$v_{371} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca3\_ACD\_CaMKII}] \quad (853)$$

10.372 Reaction `reaction_366`

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

Name CamR_Ca3_BCD_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca3\_BCD\_CaMKII} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKIIp} \quad (854)$$

Reactant

Table 748: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII	CamR_Ca3_BCD_CaMKII	

Product

Table 749: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Kinetic Law
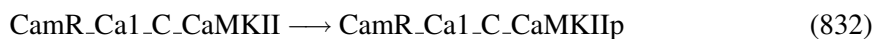
Derived unit contains undeclared units

$$v_{372} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca3\_BCD\_CaMKII}] \quad (855)$$

10.373 Reaction reaction_367

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

Name CamR_Ca4_ABCD_CaMKII phosphorylation

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKII} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKIIp} \quad (856)$$
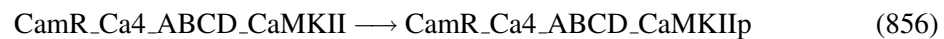
Reactant

Table 750: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	

Product

Table 751: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{373} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CaMKII\_autoPhosphorylation} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKII}] \quad (857)$$

10.374 Reaction `reaction_368`

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

Name CaMKIIp binding to CamR

Reaction equation

$$CamR + CaMKIIp \longrightarrow CamR\_CaMKIIp \tag{858}$$

Reactants

Table 752: Properties of each reactant.

Id	Name	SBO
CamR	CamR	
CaMKIIp	CaMKIIp	

Product

Table 753: Properties of each product.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{374} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR}] \cdot [\text{CaMKIIp}] \tag{859}$$

10.375 Reaction `reaction_369`

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

Name CaMKIIp dissociating from CamR_CaMKIIp

Reaction equation

$$CamR\_CaMKIIp \longrightarrow CamR + CaMKIIp \tag{860}$$

Reactant

Table 754: Properties of each reactant.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	

Products

Table 755: Properties of each product.

Id	Name	SBO
CamR	CamR	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{375} = \text{vol} \, (\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_CaMKIIp}] \tag{861}$$

10.376 Reaction `reaction_370`

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

Name CaMKIIp binding to CamR_Ca1_A

Reaction equation

$$\text{CamR\_Ca1\_A} + \text{CaMKIIp} \longrightarrow \text{CamR\_Ca1\_A\_CaMKIIp} \tag{862}$$

Reactants

Table 756: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
CaMKIIp	CaMKIIp	

Product

Table 757: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{376} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca1\_A}] \cdot [\text{CaMKIIp}] \qquad (863)$$

10.377 Reaction reaction_371

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

Name CaMKIIp dissociating from CamR_Ca1_A_CaMKIIp

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_A} + \text{CaMKIIp} \qquad (864)$$
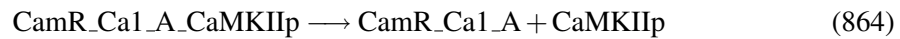
Reactant

Table 758: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	

Products

Table 759: Properties of each product.

Id	Name	SBO
CamR_Ca1_A	CamR_Ca1_A	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{377} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca1\_A\_CaMKIIp}] \qquad (865)$$

10.378 Reaction `reaction_372`

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

Name CaMKIIp binding to CamR_Ca1_B

Reaction equation

$$\text{CamR\_Ca1\_B} + \text{CaMKIIp} \longrightarrow \text{CamR\_Ca1\_B\_CaMKIIp} \tag{866}$$

Reactants

Table 760: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B	CamR_Ca1_B	
CaMKIIp	CaMKIIp	

Product

Table 761: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{378} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca1\_B}] \cdot [\text{CaMKIIp}] \tag{867}$$

10.379 Reaction `reaction_373`

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

Name CaMKIIp dissociating from CamR_Ca1_B_CaMKIIp

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_B} + \text{CaMKIIp} \tag{868}$$
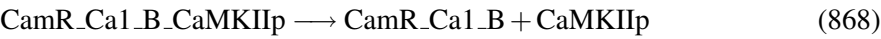
Reactant

Table 762: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	

Products

Table 763: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{379} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_CaMKIIp\_off} \cdot [\mathrm{CamR\_Ca1\_B\_CaMKIIp}] \qquad (869)$$

10.380 Reaction `reaction_374`

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

Name CaMKIIp binding to CamR_Ca1_C

Reaction equation

$$\mathrm{CamR\_Ca1\_C} + \mathrm{CaMKIIp} \longrightarrow \mathrm{CamR\_Ca1\_C\_CaMKIIp} \qquad (870)$$

Reactants

Table 764: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
CaMKIIp	CaMKIIp	

Product

Table 765: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{380} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca1\_C}] \cdot [\text{CaMKIIp}] \qquad (871)$$

10.381 Reaction reaction_375

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

Name CaMKIIp dissociating from CamR_Ca1_C_CaMKIIp

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_C} + \text{CaMKIIp} \qquad (872)$$
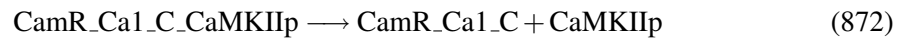
Reactant

Table 766: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	

Products

Table 767: Properties of each product.

Id	Name	SBO
CamR_Ca1_C	CamR_Ca1_C	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{381} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca1\_C\_CaMKIIp}] \qquad (873)$$

10.382 Reaction `reaction_376`

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

Name CaMKIIp binding to CamR_Ca1_D

Reaction equation

$$\text{CamR\_Ca1\_D} + \text{CaMKIIp} \longrightarrow \text{CamR\_Ca1\_D\_CaMKIIp} \tag{874}$$

Reactants

Table 768: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D	CamR_Ca1_D	
CaMKIIp	CaMKIIp	

Product

Table 769: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{382} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca1\_D}] \cdot [\text{CaMKIIp}] \tag{875}$$

10.383 Reaction `reaction_377`

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

Name CaMKIIp dissociating from CamR_Ca1_D_CaMKIIp

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_D} + \text{CaMKIIp} \tag{876}$$

Reactant

Table 770: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	

Products

Table 771: Properties of each product.

Id	Name	SBO
CamR_Ca1_D CaMKIIp	CamR_Ca1_D CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{383} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_CaMKIIp\_off} \cdot [\mathrm{CamR\_Ca1\_D\_CaMKIIp}] \tag{877}$$

10.384 Reaction reaction_378

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

Name CaMKIIp binding to CamR_Ca2_AB

Reaction equation

$$\mathrm{CamR\_Ca2\_AB} + \mathrm{CaMKIIp} \longrightarrow \mathrm{CamR\_Ca2\_AB\_CaMKIIp} \tag{878}$$

Reactants

Table 772: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB CaMKIIp	CamR_Ca2_AB CaMKIIp	

Product

Table 773: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{384} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_AB}] \cdot [\text{CaMKIIp}] \quad (879)$$

10.385 Reaction reaction_379

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

Name CaMKIIp dissociating from CamR_Ca2_AB_CaMKIIp

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_AB} + \text{CaMKIIp} \quad (880)$$

Reactant

Table 774: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	

Products

Table 775: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB	CamR_Ca2_AB	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{385} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca2\_AB\_CaMKIIp}] \quad (881)$$

10.386 Reaction `reaction_380`

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

Name CaMKIIp binding to CamR_Ca2_AC

Reaction equation

$$\text{CamR\_Ca2\_AC} + \text{CaMKIIp} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKIIp} \tag{882}$$

Reactants

Table 776: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
CaMKIIp	CaMKIIp	

Product

Table 777: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{386} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_AC}] \cdot [\text{CaMKIIp}] \tag{883}$$

10.387 Reaction `reaction_381`

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

Name CaMKIIp dissociating from CamR_Ca2_AC_CaMKIIp

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_AC} + \text{CaMKIIp} \tag{884}$$

Reactant

Table 778: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	

Products

Table 779: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{387} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_CaMKIIp\_off} \cdot [\mathrm{CamR\_Ca2\_AC\_CaMKIIp}] \tag{885}$$

10.388 Reaction `reaction_382`

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

Name CaMKIIp binding to CamR_Ca2_AD

Reaction equation

$$\mathrm{CamR\_Ca2\_AD} + \mathrm{CaMKIIp} \longrightarrow \mathrm{CamR\_Ca2\_AD\_CaMKIIp} \tag{886}$$

Reactants

Table 780: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
CaMKIIp	CaMKIIp	

Product

Table 781: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{388} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_AD}] \cdot [\text{CaMKIIp}] \qquad (887)$$

10.389 Reaction reaction_383

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

Name CaMKIIp dissociating from CamR_Ca2_AD_CaMKIIp

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_AD} + \text{CaMKIIp} \qquad (888)$$

Reactant

Table 782: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	

Products

Table 783: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD	CamR_Ca2_AD	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{389} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca2\_AD\_CaMKIIp}] \qquad (889)$$

10.390 Reaction `reaction_384`

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

Name CaMKIIp binding to CamR_Ca2_BC

Reaction equation

$$\text{CamR\_Ca2\_BC} + \text{CaMKIIp} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKIIp} \tag{890}$$

Reactants

Table 784: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
CaMKIIp	CaMKIIp	

Product

Table 785: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{390} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_BC}] \cdot [\text{CaMKIIp}] \tag{891}$$

10.391 Reaction `reaction_385`

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

Name CaMKIIp dissociating from CamR_Ca2_BC_CaMKIIp

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_BC} + \text{CaMKIIp} \tag{892}$$

Reactant

Table 786: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	

Products

Table 787: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC	CamR_Ca2_BC	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{391} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca2\_BC\_CaMKIIp}] \qquad (893)$$

10.392 Reaction `reaction_386`

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

Name CaMKIIp binding to CamR_Ca2_BD

Reaction equation

$$\text{CamR\_Ca2\_BD} + \text{CaMKIIp} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKIIp} \qquad (894)$$
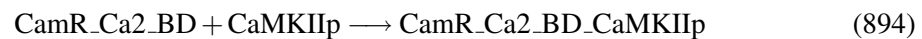
Reactants

Table 788: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
CaMKIIp	CaMKIIp	

Product

Table 789: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{392} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_BD}] \cdot [\text{CaMKIIp}] \qquad (895)$$

10.393 Reaction reaction_387

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

Name CaMKIIp dissociating from CamR_Ca2_BD_CaMKIIp

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_BD} + \text{CaMKIIp} \qquad (896)$$

Reactant

Table 790: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Products

Table 791: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD	CamR_Ca2_BD	
CaMKIIp	CaMKIIp	

Kinetic Law

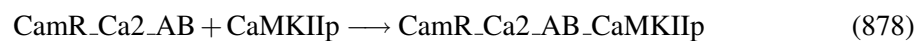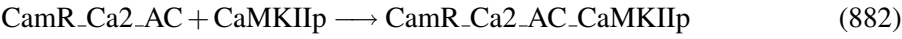**Derived unit** contains undeclared units

$$v_{393} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca2\_BD\_CaMKIIp}] \qquad (897)$$

10.394 Reaction `reaction_388`

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

Name CaMKIIp binding to CamR_Ca2_CD

Reaction equation

$$CamR\_Ca2\_CD + CaMKIIp \longrightarrow CamR\_Ca2\_CD\_CaMKIIp \tag{898}$$

Reactants

Table 792: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	
CaMKIIp	CaMKIIp	

Product

Table 793: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{394} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca2\_CD}] \cdot [\text{CaMKIIp}] \tag{899}$$

10.395 Reaction `reaction_389`

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

Name CaMKIIp dissociating from CamR_Ca2_CD_CaMKIIp

Reaction equation

$$CamR\_Ca2\_CD\_CaMKIIp \longrightarrow CamR\_Ca2\_CD + CaMKIIp \tag{900}$$

Reactant

Table 794: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	

Products

Table 795: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD	CamR_Ca2_CD	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{395} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca2\_CD\_CaMKIIp}] \qquad (901)$$

10.396 Reaction reaction_390

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

Name CaMKIIp binding to CamR_Ca3_ABC

Reaction equation

$$\text{CamR\_Ca3\_ABC} + \text{CaMKIIp} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKIIp} \qquad (902)$$

Reactants

Table 796: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC	CamR_Ca3_ABC	
CaMKIIp	CaMKIIp	

Product

Table 797: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{396} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca3\_ABC}] \cdot [\text{CaMKIIp}] \quad (903)$$

10.397 Reaction `reaction_391`

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

Name CaMKIIp dissociating from CamR_Ca3_ABC_CaMKIIp

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKIIp} \longrightarrow \text{CamR\_Ca3\_ABC} + \text{CaMKIIp} \quad (904)$$

Reactant

Table 798: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

Products

Table 799: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC CaMKIIp	CamR_Ca3_ABC CaMKIIp	

Kinetic Law

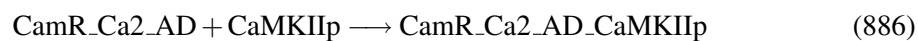**Derived unit** contains undeclared units

$$v_{397} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca3\_ABC\_CaMKIIp}] \quad (905)$$

10.398 Reaction `reaction_392`

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

Name CaMKIIp binding to CamR_Ca3_ABD

Reaction equation

$$CamR\_Ca3\_ABD + CaMKIIp \longrightarrow CamR\_Ca3\_ABD\_CaMKIIp \tag{906}$$

Reactants

Table 800: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD	CamR_Ca3_ABD	
CaMKIIp	CaMKIIp	

Product

Table 801: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{398} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca3\_ABD}] \cdot [\text{CaMKIIp}] \tag{907}$$

10.399 Reaction `reaction_393`

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

Name CaMKIIp dissociating from CamR_Ca3_ABD_CaMKIIp

Reaction equation

$$CamR\_Ca3\_ABD\_CaMKIIp \longrightarrow CamR\_Ca3\_ABD + CaMKIIp \tag{908}$$

Reactant

Table 802: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Products

Table 803: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD CaMKIIp	CamR_Ca3_ABD CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{399} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_CaMKIIp\_off} \cdot [\mathrm{CamR\_Ca3\_ABD\_CaMKIIp}] \qquad (909)$$

10.400 Reaction reaction_394

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

Name CaMKIIp binding to CamR_Ca3_ACD

Reaction equation

$$\mathrm{CamR\_Ca3\_ACD} + \mathrm{CaMKIIp} \longrightarrow \mathrm{CamR\_Ca3\_ACD\_CaMKIIp} \qquad (910)$$

Reactants

Table 804: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD CaMKIIp	CamR_Ca3_ACD CaMKIIp	

Product

Table 805: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{400} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca3\_ACD}] \cdot [\text{CaMKIIp}] \quad (911)$$

10.401 Reaction reaction_395

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

Name CaMKIIp dissociating from CamR_Ca3_ACD_CaMKIIp

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKIIp} \longrightarrow \text{CamR\_Ca3\_ACD} + \text{CaMKIIp} \quad (912)$$

Reactant

Table 806: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Products

Table 807: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD	CamR_Ca3_ACD	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{401} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca3\_ACD\_CaMKIIp}] \quad (913)$$

10.402 Reaction `reaction_396`

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

Name CaMKIIp binding to CamR_Ca3_BCD

Reaction equation

$$CamR\_Ca3\_BCD + CaMKIIp \longrightarrow CamR\_Ca3\_BCD\_CaMKIIp \qquad (914)$$

Reactants

Table 808: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD	CamR_Ca3_BCD	
CaMKIIp	CaMKIIp	

Product

Table 809: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{402} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca3\_BCD}] \cdot [\text{CaMKIIp}] \qquad (915)$$

10.403 Reaction `reaction_397`

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

Name CaMKIIp dissociating from CamR_Ca3_BCD_CaMKIIp

Reaction equation

$$CamR\_Ca3\_BCD\_CaMKIIp \longrightarrow CamR\_Ca3\_BCD + CaMKIIp \qquad (916)$$

Reactant

Table 810: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Products

Table 811: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

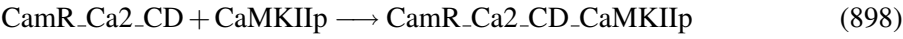**Kinetic Law**

Derived unit contains undeclared units

$$v_{403} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca3\_BCD\_CaMKIIp}] \qquad (917)$$

10.404 Reaction `reaction_398`

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

Name CaMKIIp binding to CamR_Ca4_ABCD

Reaction equation

$$\text{CamR\_Ca4\_ABCD} + \text{CaMKIIp} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKIIp} \qquad (918)$$

Reactants

Table 812: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	
CaMKIIp	CaMKIIp	

Product

Table 813: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{404} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKII\_p\_on} \cdot [\text{CamR\_Ca4\_ABCD}] \cdot [\text{CaMKIIp}] \quad (919)$$

10.405 Reaction reaction_399

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

Name CaMKIIp dissociating from CamR_Ca4_ABCD_CaMKIIp

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKIIp} \longrightarrow \text{CamR\_Ca4\_ABCD} + \text{CaMKIIp} \quad (920)$$
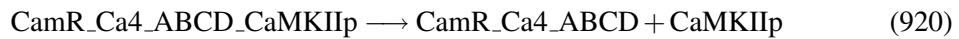
Reactant

Table 814: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Products

Table 815: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD	CamR_Ca4_ABCD	
CaMKIIp	CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{405} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_CaMKIIp\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \quad (921)$$

10.406 Reaction `reaction_504`

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

Name Ca binding to CamR_CaMKIIp site A

Reaction equation

$$\text{CamR\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_A\_CaMKIIp} \tag{922}$$
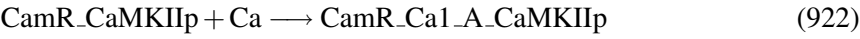
Reactants

Table 816: Properties of each reactant.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	
Ca	Ca	

Product

Table 817: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{406} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_Cam\_Ca\_on} \cdot \left[\text{CamR\_CaMKIIp}\right] \cdot \left[\text{Ca}\right] \tag{923}$$

10.407 Reaction `reaction_505`

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

Name Ca binding to CamR_CaMKIIp site B

Reaction equation

$$\text{CamR\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_B\_CaMKIIp} \tag{924}$$
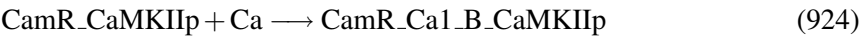
Reactants

Table 818: Properties of each reactant.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	
Ca	Ca	

Product

Table 819: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{407} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_CaMKIIp}] \cdot [\text{Ca}] \tag{925}$$

10.408 Reaction reaction_506

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

Name Ca binding to CamR_CaMKIIp site C

Reaction equation

$$\text{CamR\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca1\_C\_CaMKIIp} \tag{926}$$
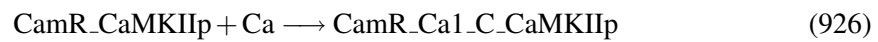
Reactants

Table 820: Properties of each reactant.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	
Ca	Ca	

Product

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Table 821: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{408} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamR\_CaMKIIp}] \cdot [\mathrm{Ca}] \tag{927}$$

10.409 Reaction reaction_507

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

Name Ca binding to CamR_CaMKIIp site D

Reaction equation

$$\mathrm{CamR\_CaMKIIp} + \mathrm{Ca} \longrightarrow \mathrm{CamR\_Ca1\_D\_CaMKIIp} \tag{928}$$

Reactants

Table 822: Properties of each reactant.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	
Ca	Ca	

Product

Table 823: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{409} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamR\_CaMKIIp}] \cdot [\mathrm{Ca}] \tag{929}$$

10.410 Reaction `reaction_508`

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

Name Ca dissociating from CamR_Ca1_A_CaMKIIp site A

Reaction equation

$$CamR\_Ca1\_A\_CaMKIIp \longrightarrow CamR\_CaMKIIp + Ca \tag{930}$$

Reactant

Table 824: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	

Products

Table 825: Properties of each product.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{410} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca1\_A\_CaMKIIp}] \tag{931}$$

10.411 Reaction `reaction_567`

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

Name Ca dissociating from CamR_Ca1_B_CaMKIIp site B

Reaction equation

$$CamR\_Ca1\_B\_CaMKIIp \longrightarrow CamR\_CaMKIIp + Ca \tag{932}$$

Reactant

Produced by SBML2LATEX

Table 826: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	

Products

Table 827: Properties of each product.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{411} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca1\_B\_CaMKIIp}] \qquad (933)$$

10.412 Reaction reaction_509

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

Name Ca dissociating from CamR_Ca1_C_CaMKIIp site C

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKIIp} \longrightarrow \text{CamR\_CaMKIIp} + \text{Ca} \qquad (934)$$

Reactant

Table 828: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	

Products

Table 829: Properties of each product.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{412} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca1\_C\_CaMKIIp}] \qquad (935)$$

10.413 Reaction reaction_510

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

Name Ca dissociating from CamR_Ca1_D_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKIIp} \longrightarrow \text{CamR\_CaMKIIp} + \text{Ca} \qquad (936)$$

Reactant

Table 830: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	

Products

Table 831: Properties of each product.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{413} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca1\_D\_CaMKIIp}] \qquad (937)$$

10.414 Reaction reaction_511

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

Name Ca binding to CamR_Ca1_A_CaMKIIp site B

Reaction equation

$$CamR\_Ca1\_A\_CaMKIIp + Ca \longrightarrow CamR\_Ca2\_AB\_CaMKIIp \qquad (938)$$
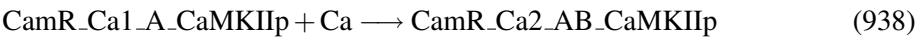
Reactants

Table 832: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	
Ca	Ca	

Product

Table 833: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{414} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [CamR\_Ca1\_A\_CaMKIIp] \cdot [Ca] \qquad (939)$$

10.415 Reaction `reaction_512`

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

Name Ca binding to CamR_Ca1_A_CaMKIIp site C

Reaction equation

$$CamR\_Ca1\_A\_CaMKIIp + Ca \longrightarrow CamR\_Ca2\_AC\_CaMKIIp \qquad (940)$$

Reactants

Table 834: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	

Id	Name	SBO
Ca	Ca	

Product

Table 835: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{415} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_A\_CaMKIIp}] \cdot [\text{Ca}] \tag{941}$$

10.416 Reaction reaction_513

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

Name Ca binding to CamR_Ca1_A_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKIIp} \tag{942}$$

Reactants

Table 836: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	
Ca	Ca	

Product

Table 837: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{416} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamR\_Ca1\_A\_CaMKIIp}] \cdot [\mathrm{Ca}] \qquad (943)$$

10.417 Reaction `reaction_514`

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

Name Ca binding to CamR_Ca1_B_CaMKIIp site A

Reaction equation

$$\mathrm{CamR\_Ca1\_B\_CaMKIIp} + \mathrm{Ca} \longrightarrow \mathrm{CamR\_Ca2\_AB\_CaMKIIp} \qquad (944)$$

Reactants

Table 838: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	
Ca	Ca	

Product

Table 839: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{417} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_Cam\_Ca\_on} \cdot [\mathrm{CamR\_Ca1\_B\_CaMKIIp}] \cdot [\mathrm{Ca}] \qquad (945)$$

10.418 Reaction `reaction_515`

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

Name Ca binding to CamR_Ca1_B_CaMKIIp site C

Reaction equation

$$CamR\_Ca1\_B\_CaMKIIp + Ca \longrightarrow CamR\_Ca2\_BC\_CaMKIIp \qquad (946)$$

Reactants

Table 840: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	
Ca	Ca	

Product

Table 841: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{418} = \text{vol}\,(\text{Spine}) \cdot K\_Cam\_Ca\_on \cdot [CamR\_Ca1\_B\_CaMKIIp] \cdot [Ca] \qquad (947)$$

10.419 Reaction `reaction_516`

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

Name Ca binding to CamR_Ca1_B_CaMKIIp site D

Reaction equation

$$CamR\_Ca1\_B\_CaMKIIp + Ca \longrightarrow CamR\_Ca2\_BD\_CaMKIIp \qquad (948)$$

Reactants

Table 842: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	
Ca	Ca	

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Product

Table 843: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{419} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_B\_CaMKIIp}] \cdot [\text{Ca}] \tag{949}$$

10.420 Reaction reaction_517

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

Name Ca binding to CamR_Ca1_C_CaMKIIp site A

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKIIp} \tag{950}$$

Reactants

Table 844: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	
Ca	Ca	

Product

Table 845: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{420} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_C\_CaMKIIp}] \cdot [\text{Ca}] \tag{951}$$

10.421 Reaction `reaction_518`

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

Name Ca binding to CamR_Ca1_C_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKIIp} \tag{952}$$

Reactants

Table 846: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	
Ca	Ca	

Product

Table 847: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{421} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_C\_CaMKIIp}] \cdot [\text{Ca}] \tag{953}$$

10.422 Reaction `reaction_519`

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

Name Ca binding to CamR_Ca1_C_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKIIp} \tag{954}$$

Reactants

Table 848: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	
Ca	Ca	

Product

Table 849: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{422} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_C\_CaMKIIp}] \cdot [\text{Ca}] \tag{955}$$

10.423 Reaction reaction_520

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

Name Ca binding to CamR_Ca1_D_CaMKIIp site A

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKIIp} \tag{956}$$

Reactants

Table 850: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	
Ca	Ca	

Product

Table 851: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{423} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D\_CaMKIIp}] \cdot [\text{Ca}] \qquad (957)$$

10.424 Reaction reaction_521

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

Name Ca binding to CamR_Ca1_D_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKIIp} \qquad (958)$$

Reactants

Table 852: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	
Ca	Ca	

Product

Table 853: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{424} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D\_CaMKIIp}] \cdot [\text{Ca}] \qquad (959)$$

10.425 Reaction `reaction_522`

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

Name Ca binding to CamR_Ca1_D_CaMKIIp site C

Reaction equation

$$CamR\_Ca1\_D\_CaMKIIp + Ca \longrightarrow CamR\_Ca2\_CD\_CaMKIIp \tag{960}$$

Reactants

Table 854: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	
Ca	Ca	

Product

Table 855: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{425} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca1\_D\_CaMKIIp}] \cdot [\text{Ca}] \tag{961}$$

10.426 Reaction `reaction_523`

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

Name Ca dissociating from CamR_Ca2_AB_CaMKIIp site A

Reaction equation

$$CamR\_Ca2\_AB\_CaMKIIp \longrightarrow CamR\_Ca1\_B\_CaMKIIp + Ca \tag{962}$$

Reactant

Table 856: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	

Products

Table 857: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{426} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AB\_CaMKIIp}] \tag{963}$$

10.427 Reaction reaction_524

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

Name Ca dissociating from CamR_Ca2_AB_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_A\_CaMKIIp} + \text{Ca} \tag{964}$$

Reactant

Table 858: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	

Products

Table 859: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	

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Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{427} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca2\_AB\_CaMKIIp}] \qquad (965)$$

10.428 Reaction reaction_525

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

Name Ca dissociating from CamR_Ca2_AC_CaMKIIp site A

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_C\_CaMKIIp} + \text{Ca} \qquad (966)$$

Reactant

Table 860: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	

Products

Table 861: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{428} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AC\_CaMKIIp}] \qquad (967)$$

10.429 Reaction reaction_526

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

Name Ca dissociating from CamR_Ca2_AC_CaMKIIp site C

Reaction equation

$$CamR\_Ca2\_AC\_CaMKIIp \longrightarrow CamR\_Ca1\_A\_CaMKIIp + Ca \qquad (968)$$

Reactant

Table 862: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	

Products

Table 863: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{429} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_CamR\_Ca\_C\_off \cdot [CamR\_Ca2\_AC\_CaMKIIp] \qquad (969)$$

10.430 Reaction reaction_527

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

Name Ca dissociating from CamR_Ca2_AD_CaMKIIp site A

Reaction equation

$$CamR\_Ca2\_AD\_CaMKIIp \longrightarrow CamR\_Ca1\_D\_CaMKIIp + Ca \qquad (970)$$

Reactant

Table 864: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	

Products

Table 865: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{430} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca2\_AD\_CaMKIIp}] \tag{971}$$

10.431 Reaction reaction_528

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

Name Ca dissociating from CamR_Ca2_AD_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_A\_CaMKIIp} + \text{Ca} \tag{972}$$

Reactant

Table 866: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	

Products

Table 867: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{431} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_AD\_CaMKIIp}] \tag{973}$$

10.432 Reaction `reaction_529`

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

Name Ca dissociating from CamR_Ca2_BC_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_C\_CaMKIIp} + \text{Ca} \tag{974}$$

Reactant

Table 868: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	

Products

Table 869: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{432} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca2\_BC\_CaMKIIp}] \tag{975}$$

10.433 Reaction `reaction_530`

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

Name Ca dissociating from CamR_Ca2_BC_CaMKIIp site C

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_B\_CaMKIIp} + \text{Ca} \tag{976}$$

Reactant

Table 870: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	

Products

Table 871: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{433} = \mathrm{vol\,(Spine)} \cdot \mathrm{K\_CamR\_Ca\_C\_off} \cdot [\mathrm{CamR\_Ca2\_BC\_CaMKIIp}] \tag{977}$$

10.434 Reaction `reaction_531`

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

Name Ca dissociating from CamR_Ca2_BD_CaMKIIp site B

Reaction equation

$$\mathrm{CamR\_Ca2\_BD\_CaMKIIp} \longrightarrow \mathrm{CamR\_Ca1\_D\_CaMKIIp} + \mathrm{Ca} \tag{978}$$

Reactant

Table 872: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Products

Table 873: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{434} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca2\_BD\_CaMKIIp}] \qquad (979)$$

10.435 Reaction reaction_532

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

Name Ca dissociating from CamR_Ca2_BD_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_B\_CaMKIIp} + \text{Ca} \qquad (980)$$

Reactant

Table 874: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Products

Table 875: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp	CamR_Ca1_B_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{435} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_BD\_CaMKIIp}] \qquad (981)$$

10.436 Reaction reaction_533

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

Name Ca dissociating from CamR_Ca2_CD_CaMKIIp site C

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_D\_CaMKIIp} + \text{Ca} \tag{982}$$

Reactant

Table 876: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	

Products

Table 877: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{436} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca2\_CD\_CaMKIIp}] \tag{983}$$

10.437 Reaction reaction_534

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

Name Ca dissociating from CamR_Ca2_CD_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKIIp} \longrightarrow \text{CamR\_Ca1\_C\_CaMKIIp} + \text{Ca} \tag{984}$$

Reactant

Table 878: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	

Products

<div align="center">

Table 879: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	
Ca	Ca	

</div>

Kinetic Law

Derived unit contains undeclared units

$$v_{437} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca2\_CD\_CaMKIIp}] \tag{985}$$

10.438 Reaction reaction_535

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

Name Ca binding to CamR_Ca2_AB_CaMKIIp site C

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKIIp} \tag{986}$$
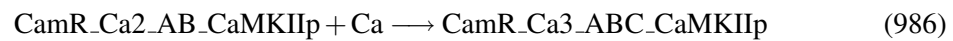
Reactants

<div align="center">

Table 880: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	
Ca	Ca	

</div>

Product

<div align="center">

Table 881: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

</div>

Kinetic Law

Derived unit contains undeclared units

$$v_{438} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AB\_CaMKIIp}] \cdot [\text{Ca}] \qquad (987)$$

10.439 Reaction `reaction_536`

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

Name Ca binding to CamR_Ca2_AB_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKIIp} \qquad (988)$$
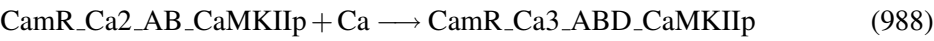
Reactants

Table 882: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	
Ca	Ca	

Product

Table 883: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{439} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AB\_CaMKIIp}] \cdot [\text{Ca}] \qquad (989)$$

10.440 Reaction `reaction_537`

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

Name Ca binding to CamR_Ca2_AC_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKIIp} \qquad (990)$$
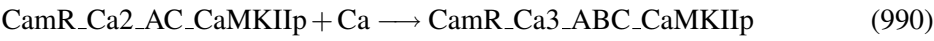
Reactants

Table 884: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	
Ca	Ca	

Product

Table 885: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{440} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AC\_CaMKIIp}] \cdot [\text{Ca}] \qquad (991)$$

10.441 Reaction `reaction_538`

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

Name Ca binding to CamR_Ca2_AC_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKIIp} \qquad (992)$$
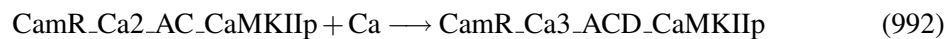
Reactants

Table 886: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	
Ca	Ca	

Product

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Table 887: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{441} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AC\_CaMKIIp}] \cdot [\text{Ca}] \qquad (993)$$

10.442 Reaction reaction_539

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

Name Ca binding to CamR_Ca2_AD_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKIIp} \qquad (994)$$
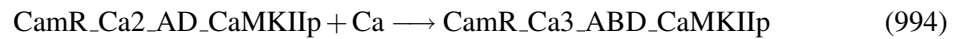
Reactants

Table 888: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	
Ca	Ca	

Product

Table 889: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{442} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_AD\_CaMKIIp}] \cdot [\text{Ca}] \qquad (995)$$

10.443 Reaction `reaction_540`

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

Name Ca binding to CamR_Ca2_AD_CaMKIIp site C

Reaction equation

$$CamR\_Ca2\_AD\_CaMKIIp + Ca \longrightarrow CamR\_Ca3\_ACD\_CaMKIIp \qquad (996)$$
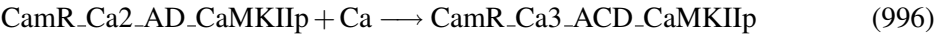
Reactants

Table 890: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	
Ca	Ca	

Product

Table 891: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{443} = vol\,(Spine) \cdot K\_Cam\_Ca\_on \cdot [CamR\_Ca2\_AD\_CaMKIIp] \cdot [Ca] \qquad (997)$$

10.444 Reaction `reaction_541`

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

Name Ca binding to CamR_Ca2_BC_CaMKIIp site A

Reaction equation

$$CamR\_Ca2\_BC\_CaMKIIp + Ca \longrightarrow CamR\_Ca3\_ABC\_CaMKIIp \qquad (998)$$
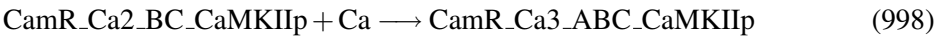
Reactants

Table 892: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	
Ca	Ca	

Product

Table 893: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{444} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_Cam\_Ca\_on} \cdot \left[\text{CamR\_Ca2\_BC\_CaMKIIp}\right] \cdot \left[\text{Ca}\right] \tag{999}$$

10.445 Reaction `reaction_542`

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

Name Ca binding to CamR_Ca2_BC_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKIIp} \tag{1000}$$

Reactants

Table 894: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	
Ca	Ca	

Product

Table 895: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{445} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BC\_CaMKIIp}] \cdot [\text{Ca}] \qquad (1001)$$

10.446 Reaction reaction_543

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

Name Ca binding to CamR_Ca2_BD_CaMKIIp site A

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKIIp} \qquad (1002)$$
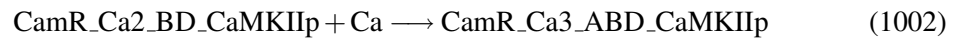
Reactants

Table 896: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	
Ca	Ca	

Product

Table 897: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{446} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_BD\_CaMKIIp}] \cdot [\text{Ca}] \qquad (1003)$$

10.447 Reaction `reaction_544`

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

Name Ca binding to CamR_Ca2_BD_CaMKIIp site C

Reaction equation

$$CamR\_Ca2\_BD\_CaMKIIp + Ca \longrightarrow CamR\_Ca3\_BCD\_CaMKIIp \qquad (1004)$$

Reactants

Table 898: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	
Ca	Ca	

Product

Table 899: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{447} = \text{vol}\left(\text{Spine}\right) \cdot K\_Cam\_Ca\_on \cdot \left[CamR\_Ca2\_BD\_CaMKIIp\right] \cdot \left[Ca\right] \qquad (1005)$$

10.448 Reaction `reaction_545`

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

Name Ca binding to CamR_Ca2_CD_CaMKIIp site A

Reaction equation

$$CamR\_Ca2\_CD\_CaMKIIp + Ca \longrightarrow CamR\_Ca3\_ACD\_CaMKIIp \qquad (1006)$$

Reactants

Table 900: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	
Ca	Ca	

Product

Table 901: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{448} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_CD\_CaMKIIp}] \cdot [\text{Ca}] \qquad (1007)$$

10.449 Reaction `reaction_546`

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

Name Ca binding to CamR_Ca2_CD_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKIIp} \qquad (1008)$$
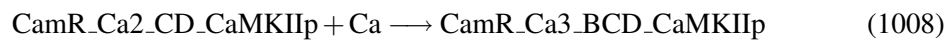
Reactants

Table 902: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	
Ca	Ca	

Product

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Table 903: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{449} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca2\_CD\_CaMKIIp}] \cdot [\text{Ca}] \qquad (1009)$$

10.450 Reaction reaction_547

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

Name Ca dissociating from CamR_Ca3_ABC_CaMKIIp site C

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKIIp} + \text{Ca} \qquad (1010)$$

Reactant

Table 904: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

Products

Table 905: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{450} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_ABC\_CaMKIIp}] \qquad (1011)$$

10.451 Reaction `reaction_548`

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

Name Ca dissociating from CamR_Ca3_ABC_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKIIp} + \text{Ca} \tag{1012}$$

Reactant

Table 906: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

Products

Table 907: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{451} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot \left[\text{CamR\_Ca3\_ABC\_CaMKIIp}\right] \tag{1013}$$

10.452 Reaction `reaction_549`

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

Name Ca dissociating from CamR_Ca3_ABC_CaMKIIp site A

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKIIp} + \text{Ca} \tag{1014}$$

Reactant

Table 908: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	

Products

Table 909: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{452} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot \left[\text{CamR\_Ca3\_ABC\_CaMKIIp}\right] \qquad (1015)$$

10.453 Reaction reaction_550

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

Name Ca dissociating from CamR_Ca3_ABD_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca3\_ABD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKIIp} + \text{Ca} \qquad (1016)$$

Reactant

Table 910: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Products

Table 911: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{453} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_D\_off} \cdot [\mathrm{CamR\_Ca3\_ABD\_CaMKIIp}] \qquad (1017)$$

10.454 Reaction `reaction_551`

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

Name Ca dissociating from CamR_Ca3_ABD_CaMKIIp site B

Reaction equation

$$\mathrm{CamR\_Ca3\_ABD\_CaMKIIp} \longrightarrow \mathrm{CamR\_Ca2\_AD\_CaMKIIp} + \mathrm{Ca} \qquad (1018)$$

Reactant

Table 912: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Products

Table 913: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{454} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_B\_off} \cdot [\mathrm{CamR\_Ca3\_ABD\_CaMKIIp}] \qquad (1019)$$

10.455 Reaction `reaction_552`

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

Name Ca dissociating from CamR_Ca3_ABD_CaMKIIp site A

Reaction equation

$$\text{CamR\_Ca3\_ABD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKIIp} + \text{Ca} \qquad (1020)$$

Reactant

Table 914: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	

Products

Table 915: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{455} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ABD\_CaMKIIp}] \qquad (1021)$$

10.456 Reaction `reaction_553`

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

Name Ca dissociating from CamR_Ca3_ACD_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKIIp} + \text{Ca} \qquad (1022)$$

Reactant

Table 916: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Products

Table 917: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{456} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_Ca\_D\_off} \cdot [\mathrm{CamR\_Ca3\_ACD\_CaMKIIp}] \qquad (1023)$$

10.457 Reaction `reaction_554`

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

Name Ca dissociating from CamR_Ca3_ACD_CaMKIIp site C

Reaction equation

$$\mathrm{CamR\_Ca3\_ACD\_CaMKIIp} \longrightarrow \mathrm{CamR\_Ca2\_AD\_CaMKIIp} + \mathrm{Ca} \qquad (1024)$$

Reactant

Table 918: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Products

Table 919: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp	CamR_Ca2_AD_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

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$$v_{457} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_ACD\_CaMKIIp}] \qquad (1025)$$

10.458 Reaction `reaction_555`

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

Name Ca dissociating from CamR_Ca3_ACD_CaMKIIp site A

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKIIp} + \text{Ca} \qquad (1026)$$

Reactant

Table 920: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Products

Table 921: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{458} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot [\text{CamR\_Ca3\_ACD\_CaMKIIp}] \qquad (1027)$$

10.459 Reaction `reaction_556`

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

Name Ca dissociating from CamR_Ca3_BCD_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca3\_BCD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKIIp} + \text{Ca} \qquad (1028)$$

Reactant

Table 922: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Products

Table 923: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp	CamR_Ca2_BC_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{459} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot \left[\text{CamR\_Ca3\_BCD\_CaMKIIp}\right] \qquad (1029)$$

10.460 Reaction reaction_557

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

Name Ca dissociating from CamR_Ca3_BCD_CaMKIIp site C

Reaction equation

$$\text{CamR\_Ca3\_BCD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKIIp} + \text{Ca} \qquad (1030)$$

Reactant

Table 924: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Products

Table 925: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{460} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca3\_BCD\_CaMKIIp}] \tag{1031}$$

10.461 Reaction reaction_558

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

Name Ca dissociating from CamR_Ca3_BCD_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca3\_BCD\_CaMKIIp} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKIIp} + \text{Ca} \tag{1032}$$

Reactant

Table 926: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	

Products

Table 927: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{461} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca3\_BCD\_CaMKIIp}] \tag{1033}$$

10.462 Reaction reaction_559

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

Name Ca binding to CamR_Ca3_BCD_CaMKIIp site A

Reaction equation

$$CamR\_Ca3\_BCD\_CaMKIIp + Ca \longrightarrow CamR\_Ca4\_ABCD\_CaMKIIp \qquad (1034)$$

Reactants

Table 928: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	
Ca	Ca	

Product

Table 929: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{462} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_Cam\_Ca\_on \cdot [CamR\_Ca3\_BCD\_CaMKIIp] \cdot [Ca] \qquad (1035)$$

10.463 Reaction `reaction_560`

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

Name Ca binding to CamR_Ca3_ACD_CaMKIIp site B

Reaction equation

$$CamR\_Ca3\_ACD\_CaMKIIp + Ca \longrightarrow CamR\_Ca4\_ABCD\_CaMKIIp \qquad (1036)$$

Reactants

Table 930: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	

Id	Name	SBO
Ca	Ca	

Product

Table 931: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{463} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_Cam\_Ca\_on} \cdot \left[\text{CamR\_Ca3\_ACD\_CaMKIIp} \right] \cdot \left[\text{Ca} \right] \qquad (1037)$$

10.464 Reaction `reaction_561`

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

Name Ca binding to CamR_Ca3_ABD_CaMKIIp site C

Reaction equation

$$\text{CamR\_Ca3\_ABD\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKIIp} \qquad (1038)$$

Reactants

Table 932: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	
Ca	Ca	

Product

Table 933: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{464} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ABD\_CaMKIIp}] \cdot [\text{Ca}] \qquad (1039)$$

10.465 Reaction `reaction_562`

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

Name Ca binding to CamR_Ca3_ABC_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKIIp} + \text{Ca} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKIIp} \qquad (1040)$$

Reactants

Table 934: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	
Ca	Ca	

Product

Table 935: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Kinetic Law

Derived unit contains undeclared units

$$v_{465} = \text{vol}\,(\text{Spine}) \cdot \text{K\_Cam\_Ca\_on} \cdot [\text{CamR\_Ca3\_ABC\_CaMKIIp}] \cdot [\text{Ca}] \qquad (1041)$$

10.466 Reaction `reaction_563`

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

Name Ca dissociating from CamR_Ca4_ABCD_CaMKIIp site A

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKIIp} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKIIp} + \text{Ca} \qquad (1042)$$

Reactant

Table 936: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Products

Table 937: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp	CamR_Ca3_BCD_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{466} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_Ca\_A\_off} \cdot \left[\text{CamR\_Ca4\_ABCD\_CaMKIIp}\right] \qquad (1043)$$

10.467 Reaction `reaction_564`

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

Name Ca dissociating from CamR_Ca4_ABCD_CaMKIIp site B

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKIIp} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKIIp} + \text{Ca} \qquad (1044)$$

Reactant

Table 938: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Products

Table 939: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp	CamR_Ca3_ACD_CaMKIIp	
Ca	Ca	

Kinetic Law

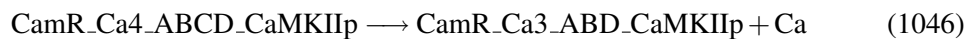**Derived unit** contains undeclared units

$$v_{467} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_B\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \qquad (1045)$$

10.468 Reaction `reaction_565`

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

Name Ca dissociating from CamR_Ca4_ABCD_CaMKIIp site C

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKIIp} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKIIp} + \text{Ca} \qquad (1046)$$

Reactant

Table 940: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Products

Table 941: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{468} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_C\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \qquad (1047)$$

10.469 Reaction `reaction_566`

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

Name Ca dissociating from CamR_Ca4_ABCD_CaMKIIp site D

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKIIp} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKIIp} + \text{Ca} \qquad (1048)$$

Reactant

Table 942: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Products

Table 943: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{469} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_Ca\_D\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \qquad (1049)$$

10.470 Reaction `reaction_400`

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

Name D binding to PKA

Reaction equation

$$\text{D} + \text{PKA} \longrightarrow \text{D\_PKA} \qquad (1050)$$

Reactants

Table 944: Properties of each reactant.

Id	Name	SBO
D	D	
PKA	PKA	

Product

Table 945: Properties of each product.

Id	Name	SBO
D_PKA	D_PKA	

Kinetic Law

Derived unit contains undeclared units

$$v_{470} = \text{vol}\,(\text{Spine}) \cdot \text{K\_D\_PKA\_on} \cdot [\text{D}] \cdot [\text{PKA}] \tag{1051}$$

10.471 Reaction `reaction_401`

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

Name D dissociating from D_PKA

Reaction equation

$$\text{D\_PKA} \longrightarrow \text{D} + \text{PKA} \tag{1052}$$

Reactant

Table 946: Properties of each reactant.

Id	Name	SBO
D_PKA	D_PKA	

Products

Table 947: Properties of each product.

Id	Name	SBO
D	D	

Id	Name	SBO
PKA	PKA	

Kinetic Law

Derived unit contains undeclared units

$$v_{471} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_D\_PKA\_off} \cdot [\text{D\_PKA}] \qquad (1053)$$

10.472 Reaction `reaction_402`

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

Name Dp dissociating from D_PKA

Reaction equation

$$\text{D\_PKA} \longrightarrow \text{Dp} + \text{PKA} \qquad (1054)$$

Reactant

Table 948: Properties of each reactant.

Id	Name	SBO
D_PKA	D_PKA	

Products

Table 949: Properties of each product.

Id	Name	SBO
Dp	Dp	
PKA	PKA	

Kinetic Law

Derived unit contains undeclared units

$$v_{472} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_D\_PKA\_off\_p} \cdot [\text{D\_PKA}] \qquad (1055)$$

10.473 Reaction `reaction_403`

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

Name Dp binding to CamR_PP2B

Reaction equation

$$Dp + CamR\_PP2B \longrightarrow Dp\_CamR\_PP2B \qquad (1056)$$

Reactants

Table 950: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_PP2B	CamR_PP2B	

Product

Table 951: Properties of each product.

Id	Name	SBO
Dp_CamR_PP2B	Dp_CamR_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{473} = vol\,(Spine) \cdot K\_CamR\_PP2B\_Dp\_on \cdot [Dp] \cdot [CamR\_PP2B] \qquad (1057)$$

10.474 Reaction `reaction_404`

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

Name Dp dissociating from Dp_CamR_PP2B

Reaction equation

$$Dp\_CamR\_PP2B \longrightarrow Dp + CamR\_PP2B \qquad (1058)$$

Reactant

Table 952: Properties of each reactant.

Id	Name	SBO
Dp_CamR_PP2B	Dp_CamR_PP2B	

Products

Table 953: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_PP2B	CamR_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{474} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_Dp\_off} \cdot [\mathrm{Dp\_CamR\_PP2B}] \tag{1059}$$

10.475 Reaction `reaction_405`

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

Name D dissociating from Dp_CamR_PP2B

Reaction equation

$$\mathrm{Dp\_CamR\_PP2B} \longrightarrow \mathrm{D} + \mathrm{CamR\_PP2B} \tag{1060}$$

Reactant

Table 954: Properties of each reactant.

Id	Name	SBO
Dp_CamR_PP2B	Dp_CamR_PP2B	

Products

Table 955: Properties of each product.

Id	Name	SBO
D	D	
CamR_PP2B	CamR_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{475} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_PP2B}] \qquad (1061)$$

10.476 Reaction `reaction_406`

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

Name Dp binding to CamR_Ca1_A_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca1\_A\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca1\_A\_PP2B} \qquad (1062)$$

Reactants

Table 956: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	

Product

Table 957: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca1_A_PP2B	Dp_CamR_Ca1_A_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{476} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca1\_A\_PP2B}] \qquad (1063)$$

10.477 Reaction `reaction_407`

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

Name Dp dissociating from Dp_CamR_Ca1_A_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca1\_A\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca1\_A\_PP2B} \qquad (1064)$$
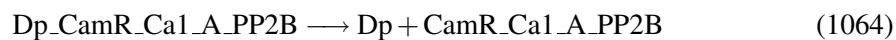
Reactant

Table 958: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca1_A_PP2B	Dp_CamR_Ca1_A_PP2B	

Products

Table 959: Properties of each product.

Id	Name	SBO
Dp CamR_Ca1_A_PP2B	Dp CamR_Ca1_A_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{477} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot \left[\text{Dp\_CamR\_Ca1\_A\_PP2B}\right] \qquad (1065)$$

10.478 Reaction `reaction_408`

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

Name D dissociating from Dp_CamR_Ca1_A_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca1\_A\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca1\_A\_PP2B} \qquad (1066)$$

Reactant

Table 960: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca1_A_PP2B	Dp_CamR_Ca1_A_PP2B	

Products

Table 961: Properties of each product.

Id	Name	SBO
D	D	

Id	Name	SBO
CamR_Ca1_A_PP2B	CamR_Ca1_A_PP2B	

Kinetic Law
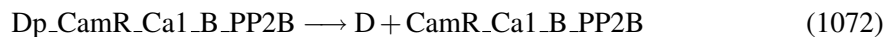
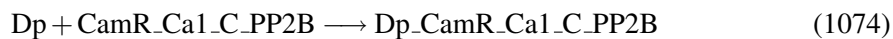**Derived unit** contains undeclared units

$$v_{478} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca1\_A\_PP2B}] \qquad (1067)$$

10.479 Reaction `reaction_409`

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

Name Dp binding to CamR_Ca1_B_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca1\_B\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca1\_B\_PP2B} \qquad (1068)$$

Reactants

Table 962: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	

Product

Table 963: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca1_B_PP2B	Dp_CamR_Ca1_B_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{479} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca1\_B\_PP2B}] \qquad (1069)$$

10.480 Reaction `reaction_410`

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

Name Dp dissociating from Dp_CamR_Ca1_B_PP2B

Reaction equation

$$Dp\_CamR\_Ca1\_B\_PP2B \longrightarrow Dp + CamR\_Ca1\_B\_PP2B \qquad (1070)$$

Reactant

Table 964: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca1_B_PP2B	Dp_CamR_Ca1_B_PP2B	

Products

Table 965: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{480} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_CamR\_PP2B\_Dp\_off \cdot [Dp\_CamR\_Ca1\_B\_PP2B] \qquad (1071)$$

10.481 Reaction `reaction_411`

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

Name D dissociating from Dp_CamR_Ca1_B_PP2B

Reaction equation

$$Dp\_CamR\_Ca1\_B\_PP2B \longrightarrow D + CamR\_Ca1\_B\_PP2B \qquad (1072)$$

Reactant

Table 966: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca1_B_PP2B	Dp_CamR_Ca1_B_PP2B	

Products

Table 967: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca1_B_PP2B	CamR_Ca1_B_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{481} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot \left[\text{Dp\_CamR\_Ca1\_B\_PP2B}\right] \qquad (1073)$$

10.482 Reaction `reaction_412`

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

Name Dp binding to CamR_Ca1_C_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca1\_C\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca1\_C\_PP2B} \qquad (1074)$$

Reactants

Table 968: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	

Product

Table 969: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca1_C_PP2B	Dp_CamR_Ca1_C_PP2B	

Kinetic Law

Derived unit contains undeclared units

Produced by SBML2LATEX

$$v_{482} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca1\_C\_PP2B}] \qquad (1075)$$

10.483 Reaction `reaction_413`

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

Name Dp dissociating from Dp_CamR_Ca1_C_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca1\_C\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca1\_C\_PP2B} \qquad (1076)$$
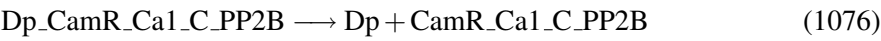
Reactant

Table 970: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca1_C_PP2B	Dp_CamR_Ca1_C_PP2B	

Products

Table 971: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{483} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca1\_C\_PP2B}] \qquad (1077)$$

10.484 Reaction `reaction_414`

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

Name D dissociating from Dp_CamR_Ca1_C_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca1\_C\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca1\_C\_PP2B} \qquad (1078)$$
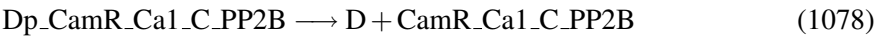
Reactant

Table 972: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca1_C_PP2B	Dp_CamR_Ca1_C_PP2B	

Products

Table 973: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca1_C_PP2B	CamR_Ca1_C_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{484} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca1\_C\_PP2B}] \qquad (1079)$$

10.485 Reaction `reaction_415`

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

Name Dp binding to CamR_Ca1_D_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca1\_D\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca1\_D\_PP2B} \qquad (1080)$$
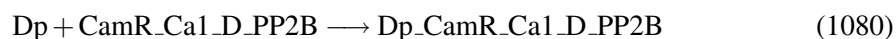
Reactants

Table 974: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	

Product

Table 975: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca1_D_PP2B	Dp_CamR_Ca1_D_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{485} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca1\_D\_PP2B}] \quad (1081)$$

10.486 Reaction reaction_416

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

Name Dp dissociating from Dp_CamR_Ca1_D_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca1\_D\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca1\_D\_PP2B} \quad (1082)$$
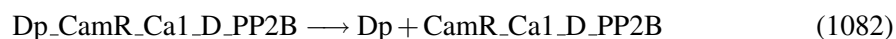
Reactant

Table 976: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca1_D_PP2B	Dp_CamR_Ca1_D_PP2B	

Products

Table 977: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{486} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca1\_D\_PP2B}] \quad (1083)$$

10.487 Reaction `reaction_417`

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

Name D dissociating from Dp_CamR_Ca1_D_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca1\_D\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca1\_D\_PP2B} \tag{1084}$$

Reactant

Table 978: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca1_D_PP2B	Dp_CamR_Ca1_D_PP2B	

Products

Table 979: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca1_D_PP2B	CamR_Ca1_D_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{487} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca1\_D\_PP2B}] \tag{1085}$$

10.488 Reaction `reaction_418`

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

Name Dp binding to CamR_Ca2_AB_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca2\_AB\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca2\_AB\_PP2B} \tag{1086}$$

Reactants

Table 980: Properties of each reactant.

Id	Name	SBO
Dp CamR_Ca2_AB_PP2B	Dp CamR_Ca2_AB_PP2B	

Product

Table 981: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca2_AB_PP2B	Dp_CamR_Ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{488} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca2\_AB\_PP2B}] \quad (1087)$$

10.489 Reaction reaction_419

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

Name Dp dissociating from Dp_CamR_Ca2_AB_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_AB\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca2\_AB\_PP2B} \quad (1088)$$

Reactant

Table 982: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_AB_PP2B	Dp_CamR_Ca2_AB_PP2B	

Products

Table 983: Properties of each product.

Id	Name	SBO
Dp	Dp	

Id	Name	SBO
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{489} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca2\_AB\_PP2B}] \qquad (1089)$$

10.490 Reaction `reaction_420`

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

Name D dissociating from Dp_CamR_Ca2_AB_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_AB\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca2\_AB\_PP2B} \qquad (1090)$$

Reactant

Table 984: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_AB_PP2B	Dp_CamR_Ca2_AB_PP2B	

Products

Table 985: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca2_AB_PP2B	CamR_Ca2_AB_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{490} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca2\_AB\_PP2B}] \qquad (1091)$$

10.491 Reaction `reaction_421`

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

Name Dp binding to CamR_Ca2_AC_PP2B

Reaction equation

$$Dp + CamR\_Ca2\_AC\_PP2B \longrightarrow Dp\_CamR\_Ca2\_AC\_PP2B \qquad (1092)$$

Reactants

Table 986: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Product

Table 987: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca2_AC_PP2B	Dp_CamR_Ca2_AC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{491} = \mathrm{vol}\,(\mathrm{Spine}) \cdot K\_CamR\_PP2B\_Dp\_on \cdot [Dp] \cdot [CamR\_Ca2\_AC\_PP2B] \qquad (1093)$$

10.492 Reaction reaction_422

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

Name Dp dissociating from Dp_CamR_Ca2_AC_PP2B

Reaction equation

$$Dp\_CamR\_Ca2\_AC\_PP2B \longrightarrow Dp + CamR\_Ca2\_AC\_PP2B \qquad (1094)$$

Reactant

Table 988: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_AC_PP2B	Dp_CamR_Ca2_AC_PP2B	

Products

Table 989: Properties of each product.

Id	Name	SBO
Dp CamR_Ca2_AC_PP2B	Dp CamR_Ca2_AC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{492} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca2\_AC\_PP2B}] \qquad (1095)$$

10.493 Reaction `reaction_423`

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

Name D dissociating from Dp_CamR_Ca2_AC_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_AC\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca2\_AC\_PP2B} \qquad (1096)$$

Reactant

Table 990: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_AC_PP2B	Dp_CamR_Ca2_AC_PP2B	

Products

Table 991: Properties of each product.

Id	Name	SBO
D CamR_Ca2_AC_PP2B	D CamR_Ca2_AC_PP2B	

Kinetic Law

Derived unit contains undeclared units

Produced by SBML2LATEX

$$v_{493} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca2\_AC\_PP2B}] \qquad (1097)$$

10.494 Reaction `reaction_424`

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

Name Dp binding to CamR_Ca2_AD_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca2\_AD\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca2\_AD\_PP2B} \qquad (1098)$$

Reactants

Table 992: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	

Product

Table 993: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca2_AD_PP2B	Dp_CamR_Ca2_AD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{494} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca2\_AD\_PP2B}] \qquad (1099)$$

10.495 Reaction `reaction_425`

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

Name Dp dissociating from Dp_CamR_Ca2_AD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_AD\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca2\_AD\_PP2B} \qquad (1100)$$

Reactant

Table 994: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_AD_PP2B	Dp_CamR_Ca2_AD_PP2B	

Products

Table 995: Properties of each product.

Id	Name	SBO
Dp CamR_Ca2_AD_PP2B	Dp CamR_Ca2_AD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{495} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca2\_AD\_PP2B}] \quad (1101)$$

10.496 Reaction `reaction_426`

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

Name D dissociating from Dp_CamR_Ca2_AD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_AD\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca2\_AD\_PP2B} \quad (1102)$$

Reactant

Table 996: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_AD_PP2B	Dp_CamR_Ca2_AD_PP2B	

Products

Table 997: Properties of each product.

Id	Name	SBO
D	D	

Id	Name	SBO
CamR_Ca2_AD_PP2B	CamR_Ca2_AD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{496} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_D\_off} \cdot [\mathrm{Dp\_CamR\_Ca2\_AD\_PP2B}] \qquad (1103)$$

10.497 Reaction reaction_427

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

Name Dp binding to CamR_Ca2_BC_PP2B

Reaction equation

$$\mathrm{Dp} + \mathrm{CamR\_Ca2\_BC\_PP2B} \longrightarrow \mathrm{Dp\_CamR\_Ca2\_BC\_PP2B} \qquad (1104)$$

Reactants

Table 998: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

Product

Table 999: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca2_BC_PP2B	Dp_CamR_Ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{497} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_Dp\_on} \cdot [\mathrm{Dp}] \cdot [\mathrm{CamR\_Ca2\_BC\_PP2B}] \qquad (1105)$$

10.498 Reaction reaction_428

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

Name Dp dissociating from Dp_CamR_Ca2_BC_PP2B

Reaction equation

$$Dp\_CamR\_Ca2\_BC\_PP2B \longrightarrow Dp + CamR\_Ca2\_BC\_PP2B \tag{1106}$$

Reactant

Table 1000: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_BC_PP2B	Dp_CamR_Ca2_BC_PP2B	

Products

Table 1001: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{498} = \text{vol}\left(\text{Spine}\right) \cdot K\_CamR\_PP2B\_Dp\_off \cdot \left[Dp\_CamR\_Ca2\_BC\_PP2B\right] \tag{1107}$$

10.499 Reaction `reaction_429`

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

Name D dissociating from Dp_CamR_Ca2_BC_PP2B

Reaction equation

$$Dp\_CamR\_Ca2\_BC\_PP2B \longrightarrow D + CamR\_Ca2\_BC\_PP2B \tag{1108}$$

Reactant

Table 1002: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_BC_PP2B	Dp_CamR_Ca2_BC_PP2B	

Products

Table 1003: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca2_BC_PP2B	CamR_Ca2_BC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{499} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca2\_BC\_PP2B}] \qquad (1109)$$

10.500 Reaction reaction_430

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

Name Dp binding to CamR_Ca2_BD_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca2\_BD\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca2\_BD\_PP2B} \qquad (1110)$$

Reactants

Table 1004: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Product

Table 1005: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca2_BD_PP2B	Dp_CamR_Ca2_BD_PP2B	

Kinetic Law

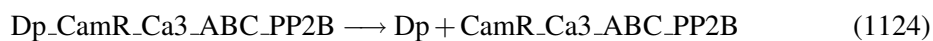**Derived unit** contains undeclared units

$$v_{500} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca2\_BD\_PP2B}] \quad (1111)$$

10.501 Reaction `reaction_431`

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

Name Dp dissociating from Dp_CamR_Ca2_BD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_BD\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca2\_BD\_PP2B} \quad (1112)$$

Reactant

Table 1006: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_BD_PP2B	Dp_CamR_Ca2_BD_PP2B	

Products

Table 1007: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{501} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca2\_BD\_PP2B}] \quad (1113)$$

10.502 Reaction `reaction_432`

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

Name D dissociating from Dp_CamR_Ca2_BD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_BD\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca2\_BD\_PP2B} \quad (1114)$$
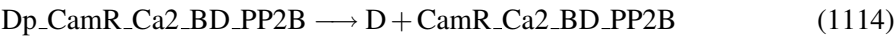
Reactant

Table 1008: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_BD_PP2B	Dp_CamR_Ca2_BD_PP2B	

Products

Table 1009: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca2_BD_PP2B	CamR_Ca2_BD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{502} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot \left[\text{Dp\_CamR\_Ca2\_BD\_PP2B} \right] \quad (1115)$$

10.503 Reaction `reaction_433`

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

Name Dp binding to CamR_Ca2_CD_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca2\_CD\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca2\_CD\_PP2B} \quad (1116)$$

Reactants

Table 1010: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Product

Table 1011: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca2_CD_PP2B	Dp_CamR_Ca2_CD_PP2B	

Kinetic Law

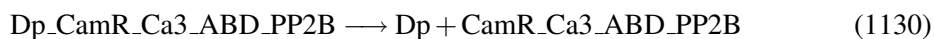**Derived unit** contains undeclared units

$$v_{503} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca2\_CD\_PP2B}] \quad (1117)$$

10.504 Reaction reaction_434

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

Name Dp dissociating from Dp_CamR_Ca2_CD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_CD\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca2\_CD\_PP2B} \quad (1118)$$

Reactant

Table 1012: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_CD_PP2B	Dp_CamR_Ca2_CD_PP2B	

Products

Table 1013: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{504} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca2\_CD\_PP2B}] \quad (1119)$$

10.505 Reaction `reaction_435`

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

Name D dissociating from Dp_CamR_Ca2_CD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca2\_CD\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca2\_CD\_PP2B} \tag{1120}$$

Reactant

Table 1014: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca2_CD_PP2B	Dp_CamR_Ca2_CD_PP2B	

Products

Table 1015: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca2_CD_PP2B	CamR_Ca2_CD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{505} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca2\_CD\_PP2B}] \tag{1121}$$

10.506 Reaction `reaction_436`

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

Name Dp binding to CamR_Ca3_ABC_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca3\_ABC\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca3\_ABC\_PP2B} \tag{1122}$$

Reactants

Table 1016: Properties of each reactant.

Id	Name	SBO
Dp CamR_Ca3_ABC_PP2B	Dp CamR_Ca3_ABC_PP2B	

Product

Table 1017: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca3_ABC_PP2B	Dp_CamR_Ca3_ABC_PP2B	

Kinetic Law

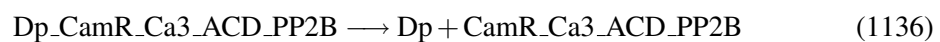**Derived unit** contains undeclared units

$$v_{506} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca3\_ABC\_PP2B}] \quad (1123)$$

10.507 Reaction `reaction_437`

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

Name Dp dissociating from Dp_CamR_Ca3_ABC_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca3\_ABC\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca3\_ABC\_PP2B} \quad (1124)$$

Reactant

Table 1018: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca3_ABC_PP2B	Dp_CamR_Ca3_ABC_PP2B	

Products

Table 1019: Properties of each product.

Id	Name	SBO
Dp	Dp	

Id	Name	SBO
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{507} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_Dp\_off} \cdot [\mathrm{Dp\_CamR\_Ca3\_ABC\_PP2B}] \qquad (1125)$$

10.508 Reaction reaction_438

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

Name D dissociating from Dp_CamR_Ca3_ABC_PP2B

Reaction equation

$$\mathrm{Dp\_CamR\_Ca3\_ABC\_PP2B} \longrightarrow \mathrm{D} + \mathrm{CamR\_Ca3\_ABC\_PP2B} \qquad (1126)$$

Reactant

Table 1020: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca3_ABC_PP2B	Dp_CamR_Ca3_ABC_PP2B	

Products

Table 1021: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca3_ABC_PP2B	CamR_Ca3_ABC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{508} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_D\_off} \cdot [\mathrm{Dp\_CamR\_Ca3\_ABC\_PP2B}] \qquad (1127)$$

10.509 Reaction reaction_439

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

Name Dp binding to CamR_Ca3_ABD_PP2B

Reaction equation

$$Dp + CamR\_Ca3\_ABD\_PP2B \longrightarrow Dp\_CamR\_Ca3\_ABD\_PP2B \qquad (1128)$$

Reactants

Table 1022: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca3_ABD_PP2B	CamR_Ca3_ABD_PP2B	

Product

Table 1023: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca3_ABD_PP2B	Dp_CamR_Ca3_ABD_PP2B	

Kinetic Law

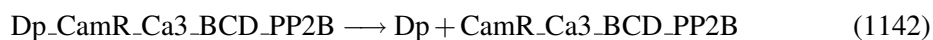**Derived unit** contains undeclared units

$$v_{509} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca3\_ABD\_PP2B}] \quad (1129)$$

10.510 Reaction `reaction_440`

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

Name Dp dissociating from Dp_CamR_Ca3_ABD_PP2B

Reaction equation

$$Dp\_CamR\_Ca3\_ABD\_PP2B \longrightarrow Dp + CamR\_Ca3\_ABD\_PP2B \qquad (1130)$$

Reactant

Table 1024: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca3_ABD_PP2B	Dp_CamR_Ca3_ABD_PP2B	

Products

Table 1025: Properties of each product.

Id	Name	SBO
Dp CamR_Ca3_ABD_PP2B	Dp CamR_Ca3_ABD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{510} = \text{vol}(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca3\_ABD\_PP2B}] \quad (1131)$$

10.511 Reaction `reaction_441`

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

Name D dissociating from Dp_CamR_Ca3_ABD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca3\_ABD\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca3\_ABD\_PP2B} \quad (1132)$$

Reactant

Table 1026: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca3_ABD_PP2B	Dp_CamR_Ca3_ABD_PP2B	

Products

Table 1027: Properties of each product.

Id	Name	SBO
D CamR_Ca3_ABD_PP2B	D CamR_Ca3_ABD_PP2B	

Kinetic Law

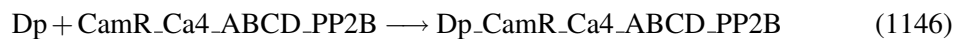**Derived unit** contains undeclared units

$$v_{511} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca3\_ABD\_PP2B}] \qquad (1133)$$

10.512 Reaction `reaction_442`

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

Name Dp binding to CamR_Ca3_ACD_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca3\_ACD\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca3\_ACD\_PP2B} \qquad (1134)$$

Reactants

Table 1028: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Product

Table 1029: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca3_ACD_PP2B	Dp_CamR_Ca3_ACD_PP2B	

Kinetic Law

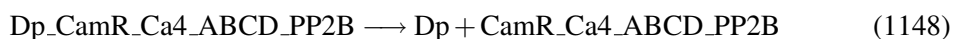**Derived unit** contains undeclared units

$$v_{512} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca3\_ACD\_PP2B}] \qquad (1135)$$

10.513 Reaction `reaction_443`

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

Name Dp dissociating from Dp_CamR_Ca3_ACD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca3\_ACD\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca3\_ACD\_PP2B} \qquad (1136)$$

Reactant

Table 1030: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca3_ACD_PP2B	Dp_CamR_Ca3_ACD_PP2B	

Products

Table 1031: Properties of each product.

Id	Name	SBO
Dp CamR_Ca3_ACD_PP2B	Dp CamR_Ca3_ACD_PP2B	

Kinetic Law

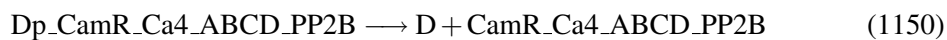**Derived unit** contains undeclared units

$$v_{513} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca3\_ACD\_PP2B}] \quad (1137)$$

10.514 Reaction `reaction_444`

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

Name D dissociating from Dp_CamR_Ca3_ACD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca3\_ACD\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca3\_ACD\_PP2B} \quad (1138)$$

Reactant

Table 1032: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca3_ACD_PP2B	Dp_CamR_Ca3_ACD_PP2B	

Products

Table 1033: Properties of each product.

Id	Name	SBO
D	D	

Id	Name	SBO
CamR_Ca3_ACD_PP2B	CamR_Ca3_ACD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{514} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca3\_ACD\_PP2B}] \quad (1139)$$

10.515 Reaction `reaction_445`

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

Name Dp binding to CamR_Ca3_BCD_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca3\_BCD\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca3\_BCD\_PP2B} \quad (1140)$$

Reactants

Table 1034: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Product

Table 1035: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca3_BCD_PP2B	Dp_CamR_Ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{515} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca3\_BCD\_PP2B}] \quad (1141)$$

10.516 Reaction `reaction_446`

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

Name Dp dissociating from Dp_CamR_Ca3_BCD_PP2B

Reaction equation

$$Dp\_CamR\_Ca3\_BCD\_PP2B \longrightarrow Dp + CamR\_Ca3\_BCD\_PP2B \qquad (1142)$$

Reactant

Table 1036: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca3_BCD_PP2B	Dp_CamR_Ca3_BCD_PP2B	

Products

Table 1037: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{516} = vol\,(Spine) \cdot K\_CamR\_PP2B\_Dp\_off \cdot [Dp\_CamR\_Ca3\_BCD\_PP2B] \qquad (1143)$$

## 10.517 Reaction reaction_447

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

Name D dissociating from Dp_CamR_Ca3_BCD_PP2B

Reaction equation

$$Dp\_CamR\_Ca3\_BCD\_PP2B \longrightarrow D + CamR\_Ca3\_BCD\_PP2B \qquad (1144)$$

Reactant

Table 1038: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca3_BCD_PP2B	Dp_CamR_Ca3_BCD_PP2B	

Products

Table 1039: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca3_BCD_PP2B	CamR_Ca3_BCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{517} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_D\_off} \cdot [\text{Dp\_CamR\_Ca3\_BCD\_PP2B}] \qquad (1145)$$

10.518 Reaction `reaction_448`

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

Name Dp binding to CamR_Ca4_ABCD_PP2B

Reaction equation

$$\text{Dp} + \text{CamR\_Ca4\_ABCD\_PP2B} \longrightarrow \text{Dp\_CamR\_Ca4\_ABCD\_PP2B} \qquad (1146)$$

Reactants

Table 1040: Properties of each reactant.

Id	Name	SBO
Dp	Dp	
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Product

Table 1041: Properties of each product.

Id	Name	SBO
Dp_CamR_Ca4_ABCD_PP2B	Dp_CamR_Ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{518} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_on} \cdot [\text{Dp}] \cdot [\text{CamR\_Ca4\_ABCD\_PP2B}] \quad (1147)$$

10.519 Reaction `reaction_449`

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

Name Dp dissociating from Dp_CamR_Ca4_ABCD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca4\_ABCD\_PP2B} \longrightarrow \text{Dp} + \text{CamR\_Ca4\_ABCD\_PP2B} \quad (1148)$$

Reactant

Table 1042: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca4_ABCD_PP2B	Dp_CamR_Ca4_ABCD_PP2B	

Products

Table 1043: Properties of each product.

Id	Name	SBO
Dp	Dp	
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{519} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamR\_PP2B\_Dp\_off} \cdot [\text{Dp\_CamR\_Ca4\_ABCD\_PP2B}] \quad (1149)$$

10.520 Reaction `reaction_450`

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

Name D dissociating from Dp_CamR_Ca4_ABCD_PP2B

Reaction equation

$$\text{Dp\_CamR\_Ca4\_ABCD\_PP2B} \longrightarrow \text{D} + \text{CamR\_Ca4\_ABCD\_PP2B} \quad (1150)$$

Reactant

Table 1044: Properties of each reactant.

Id	Name	SBO
Dp_CamR_Ca4_ABCD_PP2B	Dp_CamR_Ca4_ABCD_PP2B	

Products

Table 1045: Properties of each product.

Id	Name	SBO
D	D	
CamR_Ca4_ABCD_PP2B	CamR_Ca4_ABCD_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{520} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamR\_PP2B\_D\_off} \cdot [\mathrm{Dp\_CamR\_Ca4\_ABCD\_PP2B}] \qquad (1151)$$

10.521 Reaction reaction_451

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

Name Dp binding to PP1a

Reaction equation

$$PP1a + Dp \longrightarrow PP1a\_Dp \qquad (1152)$$

Reactants

Table 1046: Properties of each reactant.

Id	Name	SBO
PP1a	PP1a	
Dp	Dp	

Product

Table 1047: Properties of each product.

Id	Name	SBO
PP1a_Dp	PP1a_Dp	

Kinetic Law

Derived unit contains undeclared units

$$v_{521} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_PP1a\_Dp\_on} \cdot [\mathrm{PP1a}] \cdot [\mathrm{Dp}] \tag{1153}$$

10.522 Reaction `reaction_452`

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

Name Dp dissociating from PP1a

Reaction equation

$$\mathrm{PP1a\_Dp} \longrightarrow \mathrm{PP1a} + \mathrm{Dp} \tag{1154}$$

Reactant

Table 1048: Properties of each reactant.

Id	Name	SBO
PP1a_Dp	PP1a_Dp	

Products

Table 1049: Properties of each product.

Id	Name	SBO
PP1a	PP1a	
Dp	Dp	

Kinetic Law

Derived unit contains undeclared units

$$v_{522} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_PP1a\_Dp\_off} \cdot [\mathrm{PP1a\_Dp}] \tag{1155}$$

10.523 Reaction `reaction_453`

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

Name CaMKIIp binding to PP1a

Reaction equation

$$CaMKIIp + PP1a \longrightarrow CaMKIIp\_PP1a \tag{1156}$$

Reactants

Table 1050: Properties of each reactant.

Id	Name	SBO
CaMKIIp	CaMKIIp	
PP1a	PP1a	

Product

Table 1051: Properties of each product.

Id	Name	SBO
CaMKIIp_PP1a	CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{523} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CaMKIIp}] \cdot [\text{PP1a}] \tag{1157}$$

10.524 Reaction `reaction_454`

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

Name CaMKIIp dissociating from CaMKIIp_PP1a

Reaction equation

$$CaMKIIp\_PP1a \longrightarrow CaMKIIp + PP1a \tag{1158}$$
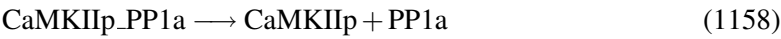
Reactant

Table 1052: Properties of each reactant.

Id	Name	SBO
CaMKIIp_PP1a	CaMKIIp_PP1a	

Products

Table 1053: Properties of each product.

Id	Name	SBO
CaMKIIp	CaMKIIp	
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{524} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CaMKIIp\_PP1a}] \tag{1159}$$

10.525 Reaction `reaction_455`

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

Name CaMKII dissociating from CaMKIIp_PP1a

Reaction equation

$$\text{CaMKIIp\_PP1a} \longrightarrow \text{CaMKII} + \text{PP1a} \tag{1160}$$

Reactant

Table 1054: Properties of each reactant.

Id	Name	SBO
CaMKIIp_PP1a	CaMKIIp_PP1a	

Products

Table 1055: Properties of each product.

Id	Name	SBO
CaMKII	CaMKII	

Id	Name	SBO
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{525} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CaMKIIp\_PP1a}] \tag{1161}$$

10.526 Reaction `reaction_456`

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

Name CamR_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_CaMKIIp\_PP1a} \tag{1162}$$

Reactants

Table 1056: Properties of each reactant.

Id	Name	SBO
CamR_CaMKIIp	CamR_CaMKIIp	
PP1a	PP1a	

Product

Table 1057: Properties of each product.

Id	Name	SBO
CamR_CaMKIIp_PP1a	CamR_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{526} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_CaMKIIp}] \cdot [\text{PP1a}] \tag{1163}$$

10.527 Reaction `reaction_457`

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

Name CamR_CaMKIIp dissociating from CamR_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_CaMKIIp} + \text{PP1a} \tag{1164}$$

Reactant

Table 1058: Properties of each reactant.

Id	Name	SBO
CamR_CaMKIIp_PP1a	CamR_CaMKIIp_PP1a	

Products

Table 1059: Properties of each product.

Id	Name	SBO
CamR_CaMKIIp PP1a	CamR_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{527} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_CaMKIIp\_PP1a}] \tag{1165}$$

10.528 Reaction `reaction_458`

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

Name CamR_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_CaMKII} + \text{PP1a} \tag{1166}$$

Reactant

Table 1060: Properties of each reactant.

Id	Name	SBO
CamR_CaMKIIp_PP1a	CamR_CaMKIIp_PP1a	

Products

Table 1061: Properties of each product.

Id	Name	SBO
CamR_CaMKII	CamR_CaMKII	
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{528} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\mathrm{CamR\_CaMKIIp\_PP1a}] \qquad (1167)$$

10.529 Reaction `reaction_459`

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

Name CamR_Ca1_A_CaMKIIp binding to PP1a

Reaction equation

$$\mathrm{CamR\_Ca1\_A\_CaMKIIp} + \mathrm{PP1a} \longrightarrow \mathrm{CamR\_Ca1\_A\_CaMKIIp\_PP1a} \qquad (1168)$$

Reactants

Table 1062: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp	CamR_Ca1_A_CaMKIIp	
PP1a	PP1a	

Product

Table 1063: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp_PP1a	CamR_Ca1_A_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{529} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca1\_A\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1169)$$

10.530 Reaction `reaction_460`

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

Name CamR_Ca1_A_CaMKIIp dissociating from CamR_Ca1_A_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca1\_A\_CaMKIIp} + \text{PP1a} \quad (1170)$$
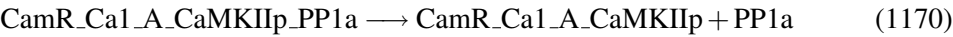
Reactant

Table 1064: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp_PP1a	CamR_Ca1_A_CaMKIIp_PP1a	

Products

Table 1065: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp PP1a	CamR_Ca1_A_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{530} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a}] \quad (1171)$$

10.531 Reaction `reaction_461`

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

Name CamR_Ca1_A_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca1\_A\_CaMKII} + \text{PP1a} \quad (1172)$$

Reactant

Table 1066: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_A_CaMKIIp_PP1a	CamR_Ca1_A_CaMKIIp_PP1a	

Products

Table 1067: Properties of each product.

Id	Name	SBO
CamR_Ca1_A_CaMKII PP1a	CamR_Ca1_A_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{531} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a}] \quad (1173)$$

10.532 Reaction `reaction_462`

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

Name CamR_Ca1_B_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca1\_B\_CaMKIIp\_PP1a} \quad (1174)$$

Reactants

Table 1068: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp PP1a	CamR_Ca1_B_CaMKIIp PP1a	

Product

Produced by SBML2LATEX

Table 1069: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp_PP1a	CamR_Ca1_B_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{532} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca1\_B\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1175)$$

10.533 Reaction reaction_463

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

Name CamR_Ca1_B_CaMKIIp dissociating from CamR_Ca1_B_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca1\_B\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca1\_B\_CaMKIIp} + \text{PP1a} \quad (1176)$$
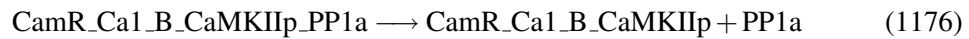
Reactant

Table 1070: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp_PP1a	CamR_Ca1_B_CaMKIIp_PP1a	

Products

Table 1071: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp PP1a	CamR_Ca1_B_CaMKIIp PP1a	

Kinetic Law

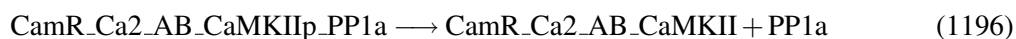**Derived unit** contains undeclared units

$$v_{533} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca1\_B\_CaMKIIp\_PP1a}] \quad (1177)$$

10.534 Reaction `reaction_464`

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

Name CamR_Ca1_B_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$CamR\_Ca1\_B\_CaMKIIp\_PP1a \longrightarrow CamR\_Ca1\_B\_CaMKII + PP1a \tag{1178}$$

Reactant

Table 1072: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_B_CaMKIIp_PP1a	CamR_Ca1_B_CaMKIIp_PP1a	

Products

Table 1073: Properties of each product.

Id	Name	SBO
CamR_Ca1_B_CaMKII PP1a	CamR_Ca1_B_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{534} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\mathrm{CamR\_Ca1\_B\_CaMKIIp\_PP1a}] \tag{1179}$$

10.535 Reaction `reaction_465`

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

Name CamR_Ca1_C_CaMKIIp binding to PP1a

Reaction equation

$$CamR\_Ca1\_C\_CaMKIIp + PP1a \longrightarrow CamR\_Ca1\_C\_CaMKIIp\_PP1a \tag{1180}$$

Reactants

Table 1074: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp PP1a	CamR_Ca1_C_CaMKIIp PP1a	

Product

Table 1075: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp_PP1a	CamR_Ca1_C_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{535} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca1\_C\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1181)$$

10.536 Reaction reaction_466

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

Name CamR_Ca1_C_CaMKIIp dissociating from CamR_Ca1_C_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca1\_C\_CaMKIIp} + \text{PP1a} \quad (1182)$$
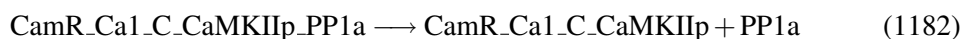
Reactant

Table 1076: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp_PP1a	CamR_Ca1_C_CaMKIIp_PP1a	

Products

Table 1077: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp	CamR_Ca1_C_CaMKIIp	

Id	Name	SBO
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{536} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a}] \quad (1183)$$

10.537 Reaction reaction_467

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

Name CamR_Ca1_C_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca1\_C\_CaMKII} + \text{PP1a} \quad (1184)$$

Reactant

Table 1078: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_C_CaMKIIp_PP1a	CamR_Ca1_C_CaMKIIp_PP1a	

Products

Table 1079: Properties of each product.

Id	Name	SBO
CamR_Ca1_C_CaMKII	CamR_Ca1_C_CaMKII	
PP1a	PP1a	

Kinetic Law

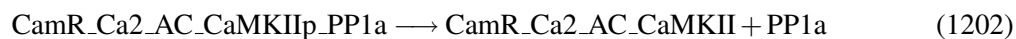**Derived unit** contains undeclared units

$$v_{537} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a}] \quad (1185)$$

10.538 Reaction reaction_468

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

Name CamR_Ca1_D_CaMKIIp binding to PP1a

Reaction equation

$$CamR\_Ca1\_D\_CaMKIIp + PP1a \longrightarrow CamR\_Ca1\_D\_CaMKIIp\_PP1a \qquad (1186)$$

Reactants

Table 1080: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp	CamR_Ca1_D_CaMKIIp	
PP1a	PP1a	

Product

Table 1081: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp_PP1a	CamR_Ca1_D_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{538} = \mathrm{vol}\left(\mathrm{Spine}\right) \cdot K\_CamMKIIp\_PP1a\_on \cdot \left[CamR\_Ca1\_D\_CaMKIIp\right] \cdot \left[PP1a\right] \quad (1187)$$

10.539 Reaction `reaction_469`

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

Name CamR_Ca1_D_CaMKIIp dissociating from CamR_Ca1_D_CaMKIIp_PP1a

Reaction equation

$$CamR\_Ca1\_D\_CaMKIIp\_PP1a \longrightarrow CamR\_Ca1\_D\_CaMKIIp + PP1a \qquad (1188)$$

Reactant

Table 1082: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp_PP1a	CamR_Ca1_D_CaMKIIp_PP1a	

Products

Table 1083: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp PP1a	CamR_Ca1_D_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{539} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot \left[\text{CamR\_Ca1\_D\_CaMKIIp\_PP1a} \right] \quad (1189)$$

10.540 Reaction reaction_470

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

Name CamR_Ca1_D_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca1\_D\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca1\_D\_CaMKII} + \text{PP1a} \quad (1190)$$

Reactant

Table 1084: Properties of each reactant.

Id	Name	SBO
CamR_Ca1_D_CaMKIIp_PP1a	CamR_Ca1_D_CaMKIIp_PP1a	

Products

Table 1085: Properties of each product.

Id	Name	SBO
CamR_Ca1_D_CaMKII PP1a	CamR_Ca1_D_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{540} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca1\_D\_CaMKIIp\_PP1a}] \quad (1191)$$

10.541 Reaction `reaction_471`

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

Name CamR_Ca2_AB_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a} \quad (1192)$$

Reactants

Table 1086: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp	CamR_Ca2_AB_CaMKIIp	
PP1a	PP1a	

Product

Table 1087: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp_PP1a	CamR_Ca2_AB_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{541} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca2\_AB\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1193)$$

10.542 Reaction `reaction_472`

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

Name CamR_Ca2_AB_CaMKIIp dissociating from CamR_Ca2_AB_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKIIp} + \text{PP1a} \quad (1194)$$

Reactant

Table 1088: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp_PP1a	CamR_Ca2_AB_CaMKIIp_PP1a	

Products

Table 1089: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp PP1a	CamR_Ca2_AB_CaMKIIp PP1a	

Kinetic Law

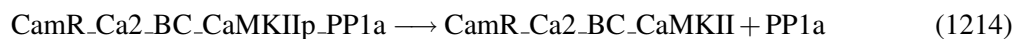**Derived unit** contains undeclared units

$$v_{542} = \text{vol}(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a}] \quad (1195)$$

10.543 Reaction `reaction_473`

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

Name CamR_Ca2_AB_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_AB\_CaMKII} + \text{PP1a} \quad (1196)$$

Reactant

Table 1090: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AB_CaMKIIp_PP1a	CamR_Ca2_AB_CaMKIIp_PP1a	

Products

Table 1091: Properties of each product.

Id	Name	SBO
CamR_Ca2_AB_CaMKII	CamR_Ca2_AB_CaMKII	

Id	Name	SBO
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{543} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a}] \quad (1197)$$

10.544 Reaction `reaction_474`

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

Name CamR_Ca2_AC_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a} \quad (1198)$$

Reactants

Table 1092: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	
PP1a	PP1a	

Product

Table 1093: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp_PP1a	CamR_Ca2_AC_CaMKIIp_PP1a	

Kinetic Law
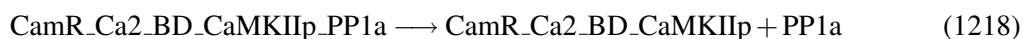
Derived unit contains undeclared units

$$v_{544} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca2\_AC\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1199)$$

10.545 Reaction `reaction_475`

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

Name CamR_Ca2_AC_CaMKIIp dissociating from CamR_Ca2_AC_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKIIp} + \text{PP1a} \tag{1200}$$

Reactant

Table 1094: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp_PP1a	CamR_Ca2_AC_CaMKIIp_PP1a	

Products

Table 1095: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp	CamR_Ca2_AC_CaMKIIp	
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{545} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a}] \tag{1201}$$

10.546 Reaction `reaction_476`

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

Name CamR_Ca2_AC_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_AC\_CaMKII} + \text{PP1a} \tag{1202}$$

Reactant

Table 1096: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC_CaMKIIp_PP1a	CamR_Ca2_AC_CaMKIIp_PP1a	

Products

Table 1097: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_CaMKII PP1a	CamR_Ca2_AC_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{546} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\mathrm{CamR\_Ca2\_AC\_CaMKIIp\_PP1a}] \quad (1203)$$

10.547 Reaction `reaction_477`

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

Name CamR_Ca2_AD_CaMKIIp binding to PP1a

Reaction equation

$$\mathrm{CamR\_Ca2\_AD\_CaMKIIp} + \mathrm{PP1a} \longrightarrow \mathrm{CamR\_Ca2\_AD\_CaMKIIp\_PP1a} \quad (1204)$$

Reactants

Table 1098: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp PP1a	CamR_Ca2_AD_CaMKIIp PP1a	

Product

Table 1099: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp_PP1a	CamR_Ca2_AD_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{547} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca2\_AD\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1205)$$

10.548 Reaction `reaction_478`

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

Name CamR_Ca2_AD_CaMKIIp dissociating from CamR_Ca2_AD_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKIIp} + \text{PP1a} \quad (1206)$$

Reactant

Table 1100: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp_PP1a	CamR_Ca2_AD_CaMKIIp_PP1a	

Products

Table 1101: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp PP1a	CamR_Ca2_AD_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{548} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a}] \quad (1207)$$

10.549 Reaction `reaction_479`

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

Name CamR_Ca2_AD_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_AD\_CaMKII} + \text{PP1a} \quad (1208)$$
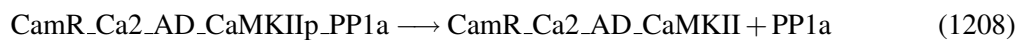
Reactant

Table 1102: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AD_CaMKIIp_PP1a	CamR_Ca2_AD_CaMKIIp_PP1a	

Products

Table 1103: Properties of each product.

Id	Name	SBO
CamR_Ca2_AD_CaMKII PP1a	CamR_Ca2_AD_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{549} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a}] \quad (1209)$$

10.550 Reaction reaction_480

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

Name CamR_Ca2_BC_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a} \quad (1210)$$

Reactants

Table 1104: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp PP1a	CamR_Ca2_BC_CaMKIIp PP1a	

Product

Table 1105: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp_PP1a	CamR_Ca2_BC_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{550} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca2\_BC\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1211)$$

10.551 Reaction reaction_481

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

Name CamR_Ca2_BC_CaMKIIp dissociating from CamR_Ca2_BC_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKIIp} + \text{PP1a} \quad (1212)$$
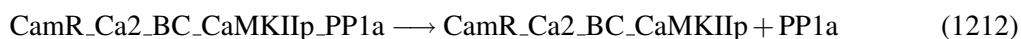
Reactant

Table 1106: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp_PP1a	CamR_Ca2_BC_CaMKIIp_PP1a	

Products

Table 1107: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp PP1a	CamR_Ca2_BC_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{551} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a}] \quad (1213)$$

10.552 Reaction `reaction_482`

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

Name CamR_Ca2_BC_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_BC\_CaMKII} + \text{PP1a} \tag{1214}$$

Reactant

Table 1108: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BC_CaMKIIp_PP1a	CamR_Ca2_BC_CaMKIIp_PP1a	

Products

Table 1109: Properties of each product.

Id	Name	SBO
CamR_Ca2_BC_CaMKII PP1a	CamR_Ca2_BC_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{552} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a}] \tag{1215}$$

10.553 Reaction `reaction_483`

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

Name CamR_Ca2_BD_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a} \tag{1216}$$

Reactants

Table 1110: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp PP1a	CamR_Ca2_BD_CaMKIIp PP1a	

Product

Table 1111: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp_PP1a	CamR_Ca2_BD_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{553} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca2\_BD\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1217)$$

10.554 Reaction `reaction_484`

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

Name CamR_Ca2_BD_CaMKIIp dissociating from CamR_Ca2_BD_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKIIp} + \text{PP1a} \quad (1218)$$

Reactant

Table 1112: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp_PP1a	CamR_Ca2_BD_CaMKIIp_PP1a	

Products

Table 1113: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp	CamR_Ca2_BD_CaMKIIp	

Id	Name	SBO
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{554} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a}] \quad (1219)$$

10.555 Reaction reaction_485

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

Name CamR_Ca2_BD_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_BD\_CaMKII} + \text{PP1a} \quad (1220)$$
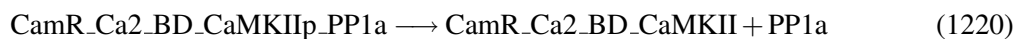
Reactant

Table 1114: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_BD_CaMKIIp_PP1a	CamR_Ca2_BD_CaMKIIp_PP1a	

Products

Table 1115: Properties of each product.

Id	Name	SBO
CamR_Ca2_BD_CaMKII	CamR_Ca2_BD_CaMKII	
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{555} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a}] \quad (1221)$$

10.556 Reaction reaction_486

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

Name CamR_Ca2_CD_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a} \qquad (1222)$$

Reactants

Table 1116: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp	CamR_Ca2_CD_CaMKIIp	
PP1a	PP1a	

Product

Table 1117: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp_PP1a	CamR_Ca2_CD_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{556} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca2\_CD\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1223)$$

10.557 Reaction reaction_487

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

Name CamR_Ca2_CD_CaMKIIp dissociating from CamR_Ca2_CD_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKIIp} + \text{PP1a} \qquad (1224)$$

Reactant

Table 1118: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp_PP1a	CamR_Ca2_CD_CaMKIIp_PP1a	

Products

Table 1119: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp PP1a	CamR_Ca2_CD_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{557} = \text{vol} \left(\text{Spine} \right) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot \left[\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a} \right] \quad (1225)$$

10.558 Reaction `reaction_488`

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

Name CamR_Ca2_CD_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca2\_CD\_CaMKII} + \text{PP1a} \quad (1226)$$
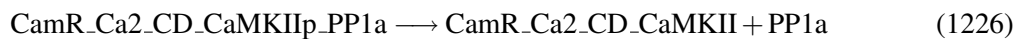
Reactant

Table 1120: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_CD_CaMKIIp_PP1a	CamR_Ca2_CD_CaMKIIp_PP1a	

Products

Table 1121: Properties of each product.

Id	Name	SBO
CamR_Ca2_CD_CaMKII PP1a	CamR_Ca2_CD_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{558} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a}] \quad (1227)$$

10.559 Reaction `reaction_489`

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

Name CamR_Ca3_ABC_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a} \quad (1228)$$

Reactants

Table 1122: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp	CamR_Ca3_ABC_CaMKIIp	
PP1a	PP1a	

Product

Table 1123: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp_PP1a	CamR_Ca3_ABC_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{559} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca3\_ABC\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1229)$$

10.560 Reaction `reaction_490`

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

Name CamR_Ca3_ABC_CaMKIIp dissociating from CamR_Ca3_ABC_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKIIp} + \text{PP1a} \quad (1230)$$

Reactant

Table 1124: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp_PP1a	CamR_Ca3_ABC_CaMKIIp_PP1a	

Products

Table 1125: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp PP1a	CamR_Ca3_ABC_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{560} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a}] \quad (1231)$$

10.561 Reaction `reaction_491`

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

Name CamR_Ca3_ABC_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca3\_ABC\_CaMKII} + \text{PP1a} \quad (1232)$$

Reactant

Table 1126: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABC_CaMKIIp_PP1a	CamR_Ca3_ABC_CaMKIIp_PP1a	

Products

Table 1127: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABC_CaMKII	CamR_Ca3_ABC_CaMKII	

Id	Name	SBO
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{561} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a}] \quad (1233)$$

10.562 Reaction `reaction_492`

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

Name CamR_Ca3_ABD_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca3\_ABD\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a} \quad (1234)$$

Reactants

Table 1128: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp	CamR_Ca3_ABD_CaMKIIp	
PP1a	PP1a	

Product

Table 1129: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKIIp_PP1a	CamR_Ca3_ABD_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{562} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca3\_ABD\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1235)$$

10.563 Reaction `reaction_493`

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

Name CamR_Ca3_ABD_CaMKIIp dissociating from CamR_Ca3_ABD_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKIIp} + \text{PP1a} \qquad (1236)$$

Reactant

Table 1130: Properties of each reactant.

Id	Name	SBO
`CamR_Ca3_ABD_CaMKIIp_PP1a`	CamR_Ca3_ABD_CaMKIIp_PP1a	

Products

Table 1131: Properties of each product.

Id	Name	SBO
`CamR_Ca3_ABD_CaMKIIp PP1a`	CamR_Ca3_ABD_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{563} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a}] \quad (1237)$$

10.564 Reaction `reaction_494`

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

Name CamR_Ca3_ABD_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca3\_ABD\_CaMKII} + \text{PP1a} \qquad (1238)$$

Reactant

Table 1132: Properties of each reactant.

Id	Name	SBO
`CamR_Ca3_ABD_CaMKIIp_PP1a`	CamR_Ca3_ABD_CaMKIIp_PP1a	

Products

Table 1133: Properties of each product.

Id	Name	SBO
CamR_Ca3_ABD_CaMKII PP1a	CamR_Ca3_ABD_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{564} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a}] \quad (1239)$$

10.565 Reaction `reaction_495`

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

Name CamR_Ca3_ACD_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a} \quad (1240)$$

Reactants

Table 1134: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp PP1a	CamR_Ca3_ACD_CaMKIIp PP1a	

Product

Table 1135: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp_PP1a	CamR_Ca3_ACD_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{565} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca3\_ACD\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1241)$$

10.566 Reaction `reaction_496`

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

Name CamR_Ca3_ACD_CaMKIIp dissociating from CamR_Ca3_ACD_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKIIp} + \text{PP1a} \quad (1242)$$
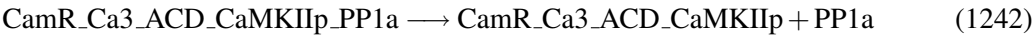
Reactant

Table 1136: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp_PP1a	CamR_Ca3_ACD_CaMKIIp_PP1a	

Products

Table 1137: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp PP1a	CamR_Ca3_ACD_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{566} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a}] \quad (1243)$$

10.567 Reaction `reaction_497`

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

Name CamR_Ca3_ACD_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca3\_ACD\_CaMKII} + \text{PP1a} \quad (1244)$$

Reactant

Table 1138: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_ACD_CaMKIIp_PP1a	CamR_Ca3_ACD_CaMKIIp_PP1a	

Products

Table 1139: Properties of each product.

Id	Name	SBO
CamR_Ca3_ACD_CaMKII PP1a	CamR_Ca3_ACD_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{567} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a}] \quad (1245)$$

10.568 Reaction `reaction_498`

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

Name CamR_Ca3_BCD_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca3\_BCD\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a} \quad (1246)$$

Reactants

Table 1140: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp PP1a	CamR_Ca3_BCD_CaMKIIp PP1a	

Product

Table 1141: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp_PP1a	CamR_Ca3_BCD_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{568} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamMKIIp\_PP1a\_on} \cdot [\mathrm{CamR\_Ca3\_BCD\_CaMKIIp}] \cdot [\mathrm{PP1a}] \quad (1247)$$

10.569 Reaction `reaction_499`

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

Name CamR_Ca3_BCD_CaMKIIp dissociating from CamR_Ca3_BCD_CaMKIIp_PP1a

Reaction equation

$$\mathrm{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a} \longrightarrow \mathrm{CamR\_Ca3\_BCD\_CaMKIIp} + \mathrm{PP1a} \quad (1248)$$

Reactant

Table 1142: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp_PP1a	CamR_Ca3_BCD_CaMKIIp_PP1a	

Products

Table 1143: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp PP1a	CamR_Ca3_BCD_CaMKIIp PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{569} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CamMKIIp\_PP1a\_off} \cdot [\mathrm{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a}] \quad (1249)$$

10.570 Reaction `reaction_500`

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

Name CamR_Ca3_BCD_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca3\_BCD\_CaMKII} + \text{PP1a} \tag{1250}$$

Reactant

Table 1144: Properties of each reactant.

Id	Name	SBO
CamR_Ca3_BCD_CaMKIIp_PP1a	CamR_Ca3_BCD_CaMKIIp_PP1a	

Products

Table 1145: Properties of each product.

Id	Name	SBO
CamR_Ca3_BCD_CaMKII PP1a	CamR_Ca3_BCD_CaMKII PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{570} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a}] \tag{1251}$$

10.571 Reaction `reaction_501`

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

Name CamR_Ca4_ABCD_CaMKIIp binding to PP1a

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKIIp} + \text{PP1a} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a} \tag{1252}$$

Reactants

Table 1146: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp PP1a	CamR_Ca4_ABCD_CaMKIIp PP1a	

Product

Table 1147: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp_PP1a	CamR_Ca4_ABCD_CaMKIIp_PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{571} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_on} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKIIp}] \cdot [\text{PP1a}] \quad (1253)$$

10.572 Reaction `reaction_502`

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

Name CamR_Ca4_ABCD_CaMKIIp dissociating from CamR_Ca4_ABCD_CaMKIIp_PP1a

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKIIp} + \text{PP1a} \quad (1254)$$

Reactant

Table 1148: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp_PP1a	CamR_Ca4_ABCD_CaMKIIp_PP1a	

Products

Table 1149: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp	CamR_Ca4_ABCD_CaMKIIp	

Id	Name	SBO
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{572} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}] \quad (1255)$$

10.573 Reaction reaction_503

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

Name CamR_Ca4_ABCD_CaMKIIp_PP1a dephosphorylation

Reaction equation

$$\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a} \longrightarrow \text{CamR\_Ca4\_ABCD\_CaMKII} + \text{PP1a} \quad (1256)$$

Reactant

Table 1150: Properties of each reactant.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKIIp_PP1a	CamR_Ca4_ABCD_CaMKIIp_PP1a	

Products

Table 1151: Properties of each product.

Id	Name	SBO
CamR_Ca4_ABCD_CaMKII	CamR_Ca4_ABCD_CaMKII	
PP1a	PP1a	

Kinetic Law

Derived unit contains undeclared units

$$v_{573} = \text{vol}\,(\text{Spine}) \cdot \text{K\_CamMKIIp\_PP1a\_p\_off} \cdot [\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a}] \quad (1257)$$

10.574 Reaction PP2B_binding_to_CamR_Ca2_AC

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

Name PP2B binding to CamR_Ca2_AC

Reaction equation

$$\text{CamR\_Ca2\_AC} + \text{PP2B} \longrightarrow \text{CamR\_Ca2\_AC\_PP2B} \qquad (1258)$$

Reactants

Table 1152: Properties of each reactant.

Id	Name	SBO
CamR_Ca2_AC	CamR_Ca2_AC	
PP2B	PP2B	

Product

Table 1153: Properties of each product.

Id	Name	SBO
CamR_Ca2_AC_PP2B	CamR_Ca2_AC_PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{574} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CamR\_PP2B\_on} \cdot [\text{CamR\_Ca2\_AC}] \cdot [\text{PP2B}] \qquad (1259)$$

10.575 Reaction `Ca_binding_to_CBP_fast`

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

Name Ca binding to CBP_fast

Reaction equation

$$\text{CBPfast} + \text{Ca} \longrightarrow \text{CBPfastCa} \qquad (1260)$$
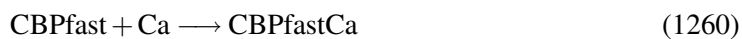
Reactants

Table 1154: Properties of each reactant.

Id	Name	SBO
CBPfast	CBP_fast	

Id	Name	SBO
Ca	Ca	

Product

Table 1155: Properties of each product.

Id	Name	SBO
CBPfastCa	CBP_fast_Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{575} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_CBP\_fast\_on} \cdot [\text{CBPfast}] \cdot [\text{Ca}] \tag{1261}$$

10.576 Reaction Ca_dissociating_from_CBP_fast_Ca

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

Name Ca dissociating from CBP_fast_Ca

Reaction equation

$$\text{CBPfastCa} \longrightarrow \text{CBPfast} + \text{Ca} \tag{1262}$$
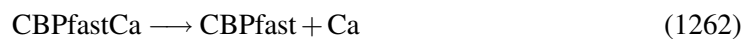
Reactant

Table 1156: Properties of each reactant.

Id	Name	SBO
CBPfastCa	CBP_fast_Ca	

Products

Table 1157: Properties of each product.

Id	Name	SBO
CBPfast	CBP_fast	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{576} = \text{vol}(\text{Spine}) \cdot \text{K\_CBP\_fast\_off} \cdot [\text{CBPfastCa}] \tag{1263}$$

10.577 Reaction Ca_binding_to_CBP_media

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

Name Ca binding to CBP_media

Reaction equation

$$\text{CBPmedia} + \text{Ca} \longrightarrow \text{CBPmediaCa} \tag{1264}$$

Reactants

Table 1158: Properties of each reactant.

Id	Name	SBO
CBPmedia	CBP_media	
Ca	Ca	

Product

Table 1159: Properties of each product.

Id	Name	SBO
CBPmediaCa	CBP_media_Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{577} = \text{vol}(\text{Spine}) \cdot \text{K\_CBP\_media\_on} \cdot [\text{CBPmedia}] \cdot [\text{Ca}] \tag{1265}$$

10.578 Reaction Ca_dissociating_from_CBP_media_Ca

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

Name Ca dissociating from CBP_media_Ca

Reaction equation

$$CBPmediaCa \longrightarrow CBPmedia + Ca \tag{1266}$$
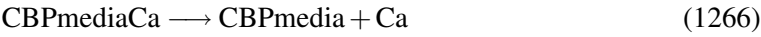
Reactant

Table 1160: Properties of each reactant.

Id	Name	SBO
CBPmediaCa	CBP_media_Ca	

Products

Table 1161: Properties of each product.

Id	Name	SBO
CBPmedia	CBP_media	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{578} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_CBP\_media\_off} \cdot [\mathrm{CBPmediaCa}] \tag{1267}$$

10.579 Reaction Ca_binding_to_PP2Bi

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

Name Ca binding to PP2Bi

Reaction equation

$$PP2Bi + Ca \longrightarrow PP2Bi\_Ca1 \tag{1268}$$
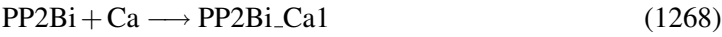
Reactants

Table 1162: Properties of each reactant.

Id	Name	SBO
PP2Bi	PP2Bi	
Ca	Ca	

Product

Table 1163: Properties of each product.

Id	Name	SBO
PP2Bi_Ca1	PP2Bi_Ca1	

Kinetic Law

Derived unit contains undeclared units

$$v_{579} = \text{vol}\,(\text{Spine}) \cdot \text{K\_PP2Bi\_Ca\_on} \cdot [\text{PP2Bi}] \cdot [\text{Ca}] \tag{1269}$$

10.580 Reaction Ca_binding_to_PP2Bi_Ca1

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

Name Ca binding to PP2Bi_Ca1

Reaction equation

$$\text{PP2Bi\_Ca1} + \text{Ca} \longrightarrow \text{PP2Bi\_Ca2} \tag{1270}$$
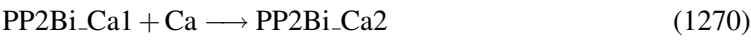
Reactants

Table 1164: Properties of each reactant.

Id	Name	SBO
PP2Bi_Ca1	PP2Bi_Ca1	
Ca	Ca	

Product

Table 1165: Properties of each product.

Id	Name	SBO
PP2Bi_Ca2	PP2Bi_Ca2	

Kinetic Law

Derived unit contains undeclared units

$$v_{580} = \text{vol}\,(\text{Spine}) \cdot \text{K\_PP2Bi\_Ca\_on} \cdot [\text{PP2Bi\_Ca1}] \cdot [\text{Ca}] \tag{1271}$$

10.581 Reaction Ca_binding_to_PP2Bi_Ca2

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

Name Ca binding to PP2Bi_Ca2

Reaction equation

$$PP2Bi\_Ca2 + Ca \longrightarrow PP2Bi\_Ca3 \tag{1272}$$
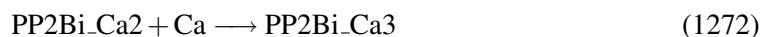
Reactants

Table 1166: Properties of each reactant.

Id	Name	SBO
PP2Bi_Ca2	PP2Bi_Ca2	
Ca	Ca	

Product

Table 1167: Properties of each product.

Id	Name	SBO
PP2Bi_Ca3	PP2Bi_Ca3	

Kinetic Law

Derived unit contains undeclared units

$$v_{581} = \mathrm{vol}\,(\mathrm{Spine}) \cdot \mathrm{K\_PP2Bi\_Ca\_on} \cdot [PP2Bi\_Ca2] \cdot [Ca] \tag{1273}$$

10.582 Reaction Ca_binding_to_PP2Bi_Ca3

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

Name Ca binding to PP2Bi_Ca3

Reaction equation

$$PP2Bi\_Ca3 + Ca \longrightarrow PP2B \tag{1274}$$

Reactants

Table 1168: Properties of each reactant.

Id	Name	SBO
PP2Bi_Ca3	PP2Bi_Ca3	
Ca	Ca	

Product

Table 1169: Properties of each product.

Id	Name	SBO
PP2B	PP2B	

Kinetic Law

Derived unit contains undeclared units

$$v_{582} = \text{vol}\,(\text{Spine}) \cdot \text{K\_PP2Bi\_Ca\_on} \cdot [\text{PP2Bi\_Ca3}] \cdot [\text{Ca}] \qquad (1275)$$

10.583 Reaction Ca_dissociating_from_PP2Bi_Ca2

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

Name Ca dissociating from PP2Bi_Ca2

Reaction equation

$$\text{PP2Bi\_Ca2} \longrightarrow \text{PP2Bi\_Ca1} + \text{Ca} \qquad (1276)$$
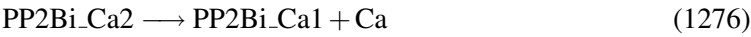
Reactant

Table 1170: Properties of each reactant.

Id	Name	SBO
PP2Bi_Ca2	PP2Bi_Ca2	

Products

Table 1171: Properties of each product.

Id	Name	SBO
PP2Bi_Ca1	PP2Bi_Ca1	

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{583} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_PP2Bi\_Ca2\_Ca\_off} \cdot [\text{PP2Bi\_Ca2}] \qquad (1277)$$

10.584 Reaction Ca_dissociating_from_PP2Bi_Ca3

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

Name Ca dissociating from PP2Bi_Ca3

Reaction equation

$$\text{PP2Bi\_Ca3} \longrightarrow \text{PP2Bi\_Ca2} + \text{Ca} \qquad (1278)$$

Reactant

Table 1172: Properties of each reactant.

Id	Name	SBO
PP2Bi_Ca3	PP2Bi_Ca3	

Products

Table 1173: Properties of each product.

Id	Name	SBO
PP2Bi_Ca2	PP2Bi_Ca2	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{584} = \text{vol}\left(\text{Spine}\right) \cdot \text{K\_PP2Bi\_Ca3\_Ca\_off} \cdot [\text{PP2Bi\_Ca3}] \qquad (1279)$$

10.585 Reaction Ca_dissociating_from_PP2B

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

Name Ca dissociating from PP2B

Reaction equation

$$PP2B \longrightarrow PP2Bi\_Ca3 + Ca \tag{1280}$$

Reactant

Table 1174: Properties of each reactant.

Id	Name	SBO
PP2B	PP2B	

Products

Table 1175: Properties of each product.

Id	Name	SBO
PP2Bi_Ca3	PP2Bi_Ca3	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{585} = \mathrm{vol\,(Spine)} \cdot \mathrm{K\_PP2B\_Ca\_off} \cdot [PP2B] \tag{1281}$$

10.586 Reaction Ca_dissociating_from_PP2Bi_Ca1

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

Name Ca dissociating from PP2Bi_Ca1

Reaction equation

$$PP2Bi\_Ca1 \longrightarrow PP2Bi + Ca \tag{1282}$$

Reactant

Table 1176: Properties of each reactant.

Id	Name	SBO
PP2Bi_Ca1	PP2Bi_Ca1	

Products

Table 1177: Properties of each product.

Id	Name	SBO
PP2Bi	PP2Bi	
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{586} = \text{vol}\,(\text{Spine}) \cdot \text{K\_PP2Bi\_Ca1\_Ca\_off} \cdot [\text{PP2Bi\_Ca1}] \tag{1283}$$

10.587 Reaction reaction_197

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

Name Ca_in

Reaction equation

$$\emptyset \longrightarrow \text{Ca} \tag{1284}$$

Product

Table 1178: Properties of each product.

Id	Name	SBO
Ca	Ca	

Kinetic Law

Derived unit contains undeclared units

$$v_{587} = \text{vol}\,(\text{Spine}) \cdot \text{function\_1}\,(\text{parameter\_1}) \tag{1285}$$

$$\text{function\_1}\,(\text{v}) = \text{v} \tag{1286}$$

$$\text{function\_1}\,(\text{v}) = \text{v} \tag{1287}$$

11 Derived Rate Equations

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

Identifiers for kinetic laws highlighted in gray cannot be verified to evaluate to units of SBML `substance` per `time`. As a result, some SBML interpreters may not be able to verify the consistency of the units on quantities in the model. Please check if

- parameters without an unit definition are involved or

- volume correction is necessary because the `hasOnlySubstanceUnits` flag may be set to `false` and `spacialDimensions` > 0 for certain species.

11.1 Species `CamR`

Name CamR

Initial concentration $1.45 \cdot 10^{-9} \text{ mol} \cdot 1^{-1}$

This species takes part in 16 reactions (as a reactant in reaction_0, reaction_1, reaction_2, reaction_3, reaction_127, reaction_159, reaction_191, reaction_368 and as a product in reaction_4, reaction_5, reaction_6, reaction_7, reaction_128, reaction_175, reaction_207, reaction_369).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR} = v_{11} + v_{12} + v_{13} + v_{14} + v_{135} + v_{182} + v_{213} + v_{375} \qquad (1288)$$
$$- v_7 - v_8 - v_9 - v_{10} - v_{134} - v_{166} - v_{198} - v_{374}$$

11.2 Species `CamT`

Name CamT

Initial concentration $3 \cdot 10^{-5} \text{ mol} \cdot 1^{-1}$

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).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT} = v_{75} + v_{76} + v_{77} + v_{78} + v_{134} - v_{71} - v_{72} - v_{73} - v_{74} - v_{135} \quad (1289)$$

11.3 Species `Ca`

Name Ca

Initial concentration $10^{-8} \text{ mol} \cdot 1^{-1}$

This species takes part in 339 reactions (as a reactant in Ca_pump, CBPslow_Ca_on, CBPvslow-_Ca_on, 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, reaction_504, reaction_505, reaction_506, reaction_507, reaction-_511, reaction_512, reaction_513, reaction_514, reaction_515, reaction_516, reaction-_517, reaction_518, reaction_519, reaction_520, reaction_521, reaction_522, reaction-_535, reaction_536, reaction_537, reaction_538, reaction_539, reaction_540, reaction-_541, reaction_542, reaction_543, reaction_544, reaction_545, reaction_546, reaction-_559, reaction_560, reaction_561, reaction_562, Ca_binding_to_CBP_fast, Ca_binding-_to_CBP_media, Ca_binding_to_PP2Bi, Ca_binding_to_PP2Bi_Ca1, Ca_binding_to_PP2Bi-_Ca2, Ca_binding_to_PP2Bi_Ca3 and as a product in Ca_leak, CBPslow_Ca_off, CBPvslow-_Ca_off, 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-

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_552, reaction_553, reaction_554, reaction_555, reaction_556, reaction_557, reaction-
_558, reaction_563, reaction_564, reaction_565, reaction_566, Ca_dissociating-
_from_CBP_fast_Ca, Ca_dissociating_from_CBP_media_Ca, Ca_dissociating_from_PP2Bi-
_Ca2, Ca_dissociating_from_PP2Bi_Ca3, Ca_dissociating_from_PP2B, Ca_dissociating-
_from_PP2Bi_Ca1, reaction_197).

$$
\begin{aligned}
\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Ca} =\ & v_2 + v_4 + v_6 + v_{11} + v_{12} + v_{13} + v_{14} + v_{27} + v_{28} + v_{29} + v_{30} + v_{31} \\
& + v_{32} + v_{33} + v_{34} + v_{35} + v_{36} + v_{37} + v_{38} + v_{51} + v_{52} + v_{53} + v_{54} + v_{55} \\
& + v_{56} + v_{57} + v_{58} + v_{59} + v_{60} + v_{61} + v_{62} + v_{67} + v_{68} + v_{69} + v_{70} + v_{75} \\
& + v_{76} + v_{77} + v_{78} + v_{91} + v_{92} + v_{93} + v_{94} + v_{95} + v_{96} + v_{97} + v_{98} + v_{99} \\
& + v_{100} + v_{101} + v_{102} + v_{115} + v_{116} + v_{117} + v_{118} + v_{119} + v_{120} + v_{121} + v_{122} \\
& + v_{123} + v_{124} + v_{125} + v_{130} + v_{131} + v_{132} + v_{133} + v_{233} + v_{234} + v_{235} + v_{248} \\
& + v_{249} + v_{250} + v_{251} + v_{252} + v_{253} + v_{254} + v_{255} + v_{256} + v_{257} + v_{258} + v_{259} \\
& + v_{272} + v_{273} + v_{274} + v_{275} + v_{276} + v_{277} + v_{278} + v_{279} + v_{280} + v_{281} + v_{282} \\
& + v_{283} + v_{288} + v_{289} + v_{290} + v_{291} + v_{296} + v_{297} + v_{298} + v_{299} + v_{312} + v_{313} \\
& + v_{314} + v_{315} + v_{316} + v_{317} + v_{318} + v_{319} + v_{320} + v_{321} + v_{322} + v_{323} + v_{336} \\
& + v_{337} + v_{338} + v_{339} + v_{340} + v_{341} + v_{342} + v_{343} + v_{344} + v_{345} + v_{346} + v_{347} \\
& + v_{352} + v_{353} + v_{354} + v_{355} + v_{356} + v_{357} + v_{410} + v_{411} + v_{412} + v_{413} + v_{426} \\
& + v_{427} + v_{428} + v_{429} + v_{430} + v_{431} + v_{432} + v_{433} + v_{434} + v_{435} + v_{436} + v_{437} \\
& + v_{450} + v_{451} + v_{452} + v_{453} + v_{454} + v_{455} + v_{456} + v_{457} + v_{458} + v_{459} + v_{460} \\
& + v_{461} + v_{466} + v_{467} + v_{468} + v_{469} + v_{576} + v_{578} + v_{583} + v_{584} + v_{585} + v_{586} \\
& + v_{587} - v_1 - v_3 - v_5 - v_7 - v_8 - v_9 - v_{10} - v_{15} - v_{16} - v_{17} - v_{18} - v_{19} \\
& - v_{20} - v_{21} - v_{22} - v_{23} - v_{24} - v_{25} - v_{26} - v_{39} - v_{40} - v_{41} - v_{42} - v_{43} \\
& - v_{44} - v_{45} - v_{46} - v_{47} - v_{48} - v_{49} - v_{50} - v_{63} - v_{64} - v_{65} - v_{66} - v_{71} \\
& - v_{72} - v_{73} - v_{74} - v_{79} - v_{80} - v_{81} - v_{82} - v_{83} - v_{84} - v_{85} - v_{86} - v_{87} \\
& - v_{88} - v_{89} - v_{90} - v_{103} - v_{104} - v_{105} - v_{106} - v_{107} - v_{108} - v_{109} - v_{110} \\
& - v_{111} - v_{112} - v_{113} - v_{114} - v_{126} - v_{127} - v_{128} - v_{129} - v_{229} - v_{230} - v_{231} \\
& - v_{232} - v_{236} - v_{237} - v_{238} - v_{239} - v_{240} - v_{241} - v_{242} - v_{243} - v_{244} - v_{245} \\
& - v_{246} - v_{247} - v_{260} - v_{261} - v_{262} - v_{263} - v_{264} - v_{265} - v_{266} - v_{267} - v_{268} \\
& - v_{269} - v_{270} - v_{271} - v_{284} - v_{285} - v_{286} - v_{287} - v_{292} - v_{293} - v_{294} - v_{295} \\
& - v_{300} - v_{301} - v_{302} - v_{303} - v_{304} - v_{305} - v_{306} - v_{307} - v_{308} - v_{309} - v_{310} \\
& - v_{311} - v_{324} - v_{325} - v_{326} - v_{327} - v_{328} - v_{329} - v_{330} - v_{331} - v_{332} - v_{333} \\
& - v_{334} - v_{335} - v_{348} - v_{349} - v_{350} - v_{351} - v_{406} - v_{407} - v_{408} - v_{409} - v_{414} \\
& - v_{415} - v_{416} - v_{417} - v_{418} - v_{419} - v_{420} - v_{421} - v_{422} - v_{423} - v_{424} - v_{425} \\
& - v_{438} - v_{439} - v_{440} - v_{441} - v_{442} - v_{443} - v_{444} - v_{445} - v_{446} - v_{447} - v_{448} \\
& - v_{449} - v_{462} - v_{463} - v_{464} - v_{465} - v_{575} - v_{577} - v_{579} - v_{580} - v_{581} - v_{582}
\end{aligned}
\tag{1290}
$$

11.4 Species CaMKII

Name CaMKII

Initial concentration $7 \cdot 10^{-5}\ \mathrm{mol} \cdot \mathrm{l}^{-1}$

This species takes part in 33 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`, `reaction_455`).

$$
\begin{aligned}
\frac{d}{dt}\text{CaMKII} = {} & v_{182} + v_{183} + v_{184} + v_{185} + v_{186} + v_{187} + v_{188} + v_{189} + v_{190} \\
& + v_{191} + v_{192} + v_{193} + v_{194} + v_{195} + v_{196} + v_{197} + v_{525} \\
& - v_{166} - v_{167} - v_{168} - v_{169} - v_{170} - v_{171} - v_{172} - v_{173} \\
& - v_{174} - v_{175} - v_{176} - v_{177} - v_{178} - v_{179} - v_{180} - v_{181}
\end{aligned}
\tag{1291}
$$

11.5 Species PP2B

Name PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 34 reactions (as a reactant in `reaction_191`, `reaction_192`, `reaction-_193`, `reaction_194`, `reaction_195`, `reaction_196`, `reaction_198`, `reaction_199`, `reaction-_200`, `reaction_201`, `reaction_202`, `reaction_203`, `reaction_204`, `reaction_205`, `reaction-_206`, `PP2B_binding_to_CamR_Ca2_AC`, `Ca_dissociating_from_PP2B` 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`, `Ca_binding_to_PP2Bi_Ca3`).

$$
\begin{aligned}
\frac{d}{dt}\text{PP2B} = {} & v_{213} + v_{214} + v_{215} + v_{216} + v_{217} + v_{218} + v_{219} + v_{220} + v_{221} \\
& + v_{222} + v_{223} + v_{224} + v_{225} + v_{226} + v_{227} + v_{228} + v_{582} - v_{198} \\
& - v_{199} - v_{200} - v_{201} - v_{202} - v_{203} - v_{204} - v_{205} - v_{206} \\
& - v_{207} - v_{208} - v_{209} - v_{210} - v_{211} - v_{212} - v_{574} - v_{585}
\end{aligned}
\tag{1292}
$$

11.6 Species D

Name D

Initial concentration $3 \cdot 10^{-6} \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 18 reactions (as a reactant in `reaction_400` and as a product in `reaction_401`, `reaction_405`, `reaction_408`, `reaction_411`, `reaction_414`, `reaction-_417`, `reaction_420`, `reaction_423`, `reaction_426`, `reaction_429`, `reaction_432`, `reaction-_435`, `reaction_438`, `reaction_441`, `reaction_444`, `reaction_447`, `reaction_450`).

$$\frac{d}{dt}D = v_{471} + v_{475} + v_{478} + v_{481} + v_{484} + v_{487} + v_{490} + v_{493} + v_{496} \quad (1293)$$
$$+ v_{499} + v_{502} + v_{505} + v_{508} + v_{511} + v_{514} + v_{517} + v_{520} - v_{470}$$

11.7 Species PKA

Name PKA

Initial concentration $1.2 \cdot 10^{-8} \, \text{mol} \cdot 1^{-1}$

This species takes part in three reactions (as a reactant in `reaction_400` and as a product in `reaction_401`, `reaction_402`).

$$\frac{d}{dt}\text{PKA} = v_{471} + v_{472} - v_{470} \quad (1294)$$

11.8 Species PP1a

Name PP1a

Initial concentration $2 \cdot 10^{-6} \, \text{mol} \cdot 1^{-1}$

This species takes part in 53 reactions (as a reactant in `reaction_451`, `reaction_453`, `reaction_456`, `reaction_459`, `reaction_462`, `reaction_465`, `reaction_468`, `reaction_471`, `reaction_474`, `reaction_477`, `reaction_480`, `reaction_483`, `reaction_486`, `reaction_489`, `reaction_492`, `reaction_495`, `reaction_498`, `reaction_501` and as a product in `reaction_452`, `reaction_454`, `reaction_455`, `reaction_457`, `reaction_458`, `reaction_460`, `reaction_461`, `reaction_463`, `reaction_464`, `reaction_466`, `reaction_467`, `reaction_469`, `reaction_470`, `reaction_472`, `reaction_473`, `reaction_475`, `reaction_476`, `reaction_478`, `reaction_479`, `reaction_481`, `reaction_482`, `reaction_484`, `reaction_485`, `reaction_487`, `reaction_488`, `reaction_490`, `reaction_491`, `reaction_493`, `reaction_494`, `reaction_496`, `reaction_497`, `reaction_499`, `reaction_500`, `reaction_502`, `reaction_503`).

$$\frac{d}{dt}\text{PP1a} = v_{522} + v_{524} + v_{525} + v_{527} + v_{528} + v_{530} + v_{531} + v_{533} + v_{534} + v_{536} + v_{537}$$
$$+ v_{539} + v_{540} + v_{542} + v_{543} + v_{545} + v_{546} + v_{548} + v_{549} + v_{551} + v_{552} + v_{554}$$
$$+ v_{555} + v_{557} + v_{558} + v_{560} + v_{561} + v_{563} + v_{564} + v_{566} + v_{567} + v_{569} + v_{570}$$
$$+ v_{572} + v_{573} - v_{521} - v_{523} - v_{526} - v_{529} - v_{532} - v_{535} - v_{538} - v_{541}$$
$$- v_{544} - v_{547} - v_{550} - v_{553} - v_{556} - v_{559} - v_{562} - v_{565} - v_{568} - v_{571}$$
$$(1295)$$

11.9 Species `CBPfast`

Name CBP_fast

Initial concentration $8 \cdot 10^{-5}$ mol·l^{-1}

This species takes part in two reactions (as a reactant in `Ca_binding_to_CBP_fast` and as a product in `Ca_dissociating_from_CBP_fast_Ca`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CBPfast} = v_{576} - v_{575} \tag{1296}$$

11.10 Species `CBPmedia`

Name CBP_media

Initial concentration $8 \cdot 10^{-5}$ mol·l^{-1}

This species takes part in two reactions (as a reactant in `Ca_binding_to_CBP_media` and as a product in `Ca_dissociating_from_CBP_media_Ca`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CBPmedia} = v_{578} - v_{577} \tag{1297}$$

11.11 Species `CBPslow`

Name CBP_slow

Initial concentration $2 \cdot 10^{-5}$ mol·l^{-1}

This species takes part in two reactions (as a reactant in `CBPslow_Ca_on` and as a product in `CBPslow_Ca_off`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CBPslow} = v_{4} - v_{3} \tag{1298}$$

11.12 Species `CBPvslow`

Name CBP_vslow

Initial concentration $2 \cdot 10^{-5}$ mol·l^{-1}

This species takes part in two reactions (as a reactant in `CBPvslow_Ca_on` and as a product in `CBPvslow_Ca_off`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CBPvslow} = v_{6} - v_{5} \tag{1299}$$

11.13 Species `CBPfastCa`

Name CBP_fast_Ca

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in two reactions (as a reactant in `Ca_dissociating_from_CBP_fast_Ca` and as a product in `Ca_binding_to_CBP_fast`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CBPfastCa} = v_{575} - v_{576} \tag{1300}$$

11.14 Species `CBPmediaCa`

Name CBP_media_Ca

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in two reactions (as a reactant in `Ca_dissociating_from_CBP_media-_Ca` and as a product in `Ca_binding_to_CBP_media`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CBPmediaCa} = v_{577} - v_{578} \tag{1301}$$

11.15 Species `CBPslowCa`

Name CBP_slow_Ca

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in two reactions (as a reactant in `CBPslow_Ca_off` and as a product in `CBPslow_Ca_on`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CBPslowCa} = v_{3} - v_{4} \tag{1302}$$

11.16 Species `CBPvslowCa`

Name CBP_vslow_Ca

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in two reactions (as a reactant in `CBPvslow_Ca_off` and as a product in `CBPvslow_Ca_on`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CBPvslowCa} = v_{5} - v_{6} \tag{1303}$$

11.17 Species `CamR_Ca1_A`

Name CamR_Ca1_A

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_4`, `reaction_8`, `reaction_9`, `reaction_10`, `reaction_129`, `reaction_160`, `reaction_192`, `reaction_370` and as a product in `reaction_0`, `reaction_20`, `reaction_21`, `reaction_22`, `reaction_133`, `reaction_176`, `reaction_208`, `reaction_371`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_A} = v_7 + v_{27} + v_{28} + v_{29} + v_{140} + v_{183} + v_{214} + v_{377}$$
$$- v_{11} - v_{15} - v_{16} - v_{17} - v_{136} - v_{167} - v_{199} - v_{376} \tag{1304}$$

11.18 Species `CamR_Ca1_B`

Name CamR_Ca1_B

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_5`, `reaction_11`, `reaction_12`, `reaction_13`, `reaction_130`, `reaction_161`, `reaction_193`, `reaction_372` and as a product in `reaction_1`, `reaction_23`, `reaction_24`, `reaction_25`, `reaction_134`, `reaction_177`, `reaction_209`, `reaction_373`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_B} = v_8 + v_{30} + v_{31} + v_{32} + v_{141} + v_{184} + v_{215} + v_{379}$$
$$- v_{12} - v_{18} - v_{19} - v_{20} - v_{137} - v_{168} - v_{200} - v_{378} \tag{1305}$$

11.19 Species `CamR_Ca1_C`

Name CamR_Ca1_C

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_6`, `reaction_14`, `reaction_15`, `reaction_16`, `reaction_131`, `reaction_162`, `reaction_194`, `reaction_374` and as a product in `reaction_2`, `reaction_26`, `reaction_27`, `reaction_28`, `reaction_135`, `reaction_178`, `reaction_210`, `reaction_375`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_C} = v_9 + v_{33} + v_{34} + v_{35} + v_{142} + v_{185} + v_{216} + v_{381}$$
$$- v_{13} - v_{21} - v_{22} - v_{23} - v_{138} - v_{169} - v_{201} - v_{380} \tag{1306}$$

11.20 Species `CamR_Ca1_D`

Name CamR_Ca1_D

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_7`, `reaction_17`, `reaction_18`, `reaction_19`, `reaction_132`, `reaction_163`, `reaction_195`, `reaction_376` and as a product in `reaction_3`, `reaction_29`, `reaction_30`, `reaction_31`, `reaction_136`, `reaction_179`, `reaction_211`, `reaction_377`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca1\_D} = v_{10} + v_{36} + v_{37} + v_{38} + v_{143} + v_{186} + v_{217} + v_{383} \tag{1307}$$
$$- v_{14} - v_{24} - v_{25} - v_{26} - v_{139} - v_{170} - v_{202} - v_{382}$$

11.21 Species `CamR_Ca2_AB`

Name CamR_Ca2_AB

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_20`, `reaction_23`, `reaction_32`, `reaction_33`, `reaction_137`, `reaction_164`, `reaction_196`, `reaction_378` and as a product in `reaction_8`, `reaction_11`, `reaction_46`, `reaction_49`, `reaction_143`, `reaction_180`, `reaction_212`, `reaction_379`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_AB} = v_{15} + v_{18} + v_{53} + v_{56} + v_{150} + v_{187} + v_{218} + v_{385} \tag{1308}$$
$$- v_{27} - v_{30} - v_{39} - v_{40} - v_{144} - v_{171} - v_{203} - v_{384}$$

11.22 Species `CamR_Ca2_AC`

Name CamR_Ca2_AC

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_21`, `reaction_26`, `reaction_34`, `reaction_35`, `reaction_138`, `reaction_165`, `reaction_380`, `PP2B_binding_to_CamR_Ca2_AC` and as a product in `reaction_9`, `reaction_14`, `reaction_45`, `reaction_52`, `reaction_144`, `reaction_181`, `reaction_213`, `reaction_381`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_AC} = v_{16} + v_{21} + v_{52} + v_{59} + v_{151} + v_{188} + v_{219} + v_{387} \tag{1309}$$
$$- v_{28} - v_{33} - v_{41} - v_{42} - v_{145} - v_{172} - v_{386} - v_{574}$$

11.23 Species `CamR_Ca2_AD`

Name CamR_Ca2_AD

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_22`, `reaction_29`, `reaction-_36`, `reaction_37`, `reaction_139`, `reaction_166`, `reaction_198`, `reaction_382` and as a product in `reaction_10`, `reaction_17`, `reaction_48`, `reaction_51`, `reaction_145`, `reaction-_182`, `reaction_214`, `reaction_383`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_AD} = v_{17} + v_{24} + v_{55} + v_{58} + v_{152} + v_{189} + v_{220} + v_{389} \tag{1310}$$
$$- v_{29} - v_{36} - v_{43} - v_{44} - v_{146} - v_{173} - v_{204} - v_{388}$$

11.24 Species `CamR_Ca2_BC`

Name CamR_Ca2_BC

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_24`, `reaction_27`, `reaction-_38`, `reaction_39`, `reaction_140`, `reaction_167`, `reaction_199`, `reaction_384` and as a product in `reaction_12`, `reaction_15`, `reaction_44`, `reaction_55`, `reaction_146`, `reaction-_183`, `reaction_215`, `reaction_385`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_BC} = v_{19} + v_{22} + v_{51} + v_{62} + v_{153} + v_{190} + v_{221} + v_{391} \tag{1311}$$
$$- v_{31} - v_{34} - v_{45} - v_{46} - v_{147} - v_{174} - v_{205} - v_{390}$$

11.25 Species `CamR_Ca2_BD`

Name CamR_Ca2_BD

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_25`, `reaction_30`, `reaction-_40`, `reaction_41`, `reaction_141`, `reaction_168`, `reaction_200`, `reaction_386` and as a product in `reaction_13`, `reaction_18`, `reaction_47`, `reaction_54`, `reaction_147`, `reaction-_184`, `reaction_216`, `reaction_387`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_BD} = v_{20} + v_{25} + v_{54} + v_{61} + v_{154} + v_{191} + v_{222} + v_{393} \tag{1312}$$
$$- v_{32} - v_{37} - v_{47} - v_{48} - v_{148} - v_{175} - v_{206} - v_{392}$$

11.26 Species `CamR_Ca2_CD`

Name CamR_Ca2_CD

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_28`, `reaction_31`, `reaction_42`, `reaction_43`, `reaction_142`, `reaction_169`, `reaction_201`, `reaction_388` and as a product in `reaction_16`, `reaction_19`, `reaction_50`, `reaction_53`, `reaction_148`, `reaction_185`, `reaction_217`, `reaction_389`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_CD} = v_{23} + v_{26} + v_{57} + v_{60} + v_{155} + v_{192} + v_{223} + v_{395}$$
$$- v_{35} - v_{38} - v_{49} - v_{50} - v_{149} - v_{176} - v_{207} - v_{394} \tag{1313}$$

11.27 Species `CamR_Ca3_ABC`

Name CamR_Ca3_ABC

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_44`, `reaction_45`, `reaction_46`, `reaction_56`, `reaction_149`, `reaction_170`, `reaction_202`, `reaction_390` and as a product in `reaction_32`, `reaction_34`, `reaction_38`, `reaction_60`, `reaction_153`, `reaction_186`, `reaction_218`, `reaction_391`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca3\_ABC} = v_{39} + v_{41} + v_{45} + v_{67} + v_{160} + v_{193} + v_{224} + v_{397}$$
$$- v_{51} - v_{52} - v_{53} - v_{63} - v_{156} - v_{177} - v_{208} - v_{396} \tag{1314}$$

11.28 Species `CamR_Ca3_ABD`

Name CamR_Ca3_ABD

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_47`, `reaction_48`, `reaction_49`, `reaction_57`, `reaction_150`, `reaction_171`, `reaction_203`, `reaction_392` and as a product in `reaction_33`, `reaction_36`, `reaction_40`, `reaction_61`, `reaction_154`, `reaction_187`, `reaction_219`, `reaction_393`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca3\_ABD} = v_{40} + v_{43} + v_{47} + v_{68} + v_{161} + v_{194} + v_{225} + v_{399}$$
$$- v_{54} - v_{55} - v_{56} - v_{64} - v_{157} - v_{178} - v_{209} - v_{398} \tag{1315}$$

11.29 Species `CamR_Ca3_ACD`

Name CamR_Ca3_ACD

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_50`, `reaction_51`, `reaction-_52`, `reaction_58`, `reaction_151`, `reaction_172`, `reaction_204`, `reaction_394` and as a product in `reaction_35`, `reaction_37`, `reaction_42`, `reaction_62`, `reaction_155`, `reaction-_188`, `reaction_220`, `reaction_395`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca3\_ACD} = v_{42} + v_{44} + v_{49} + v_{69} + v_{162} + v_{195} + v_{226} + v_{401}$$
$$- v_{57} - v_{58} - v_{59} - v_{65} - v_{158} - v_{179} - v_{210} - v_{400} \tag{1316}$$

11.30 Species `CamR_Ca3_BCD`

Name CamR_Ca3_BCD

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_53`, `reaction_54`, `reaction-_55`, `reaction_59`, `reaction_152`, `reaction_173`, `reaction_205`, `reaction_396` and as a product in `reaction_39`, `reaction_41`, `reaction_43`, `reaction_63`, `reaction_156`, `reaction-_189`, `reaction_221`, `reaction_397`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca3\_BCD} = v_{46} + v_{48} + v_{50} + v_{70} + v_{163} + v_{196} + v_{227} + v_{403}$$
$$- v_{60} - v_{61} - v_{62} - v_{66} - v_{159} - v_{180} - v_{211} - v_{402} \tag{1317}$$

11.31 Species `CamR_Ca4_ABCD`

Name CamR_Ca4_ABCD

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 16 reactions (as a reactant in `reaction_60`, `reaction_61`, `reaction-_62`, `reaction_63`, `reaction_157`, `reaction_174`, `reaction_206`, `reaction_398` and as a product in `reaction_56`, `reaction_57`, `reaction_58`, `reaction_59`, `reaction_158`, `reaction-_190`, `reaction_222`, `reaction_399`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca4\_ABCD} = v_{63} + v_{64} + v_{65} + v_{66} + v_{165} + v_{197} + v_{228} + v_{405}$$
$$- v_{67} - v_{68} - v_{69} - v_{70} - v_{164} - v_{181} - v_{212} - v_{404} \tag{1318}$$

11.32 Species `CamT_Ca1_A`

Name CamT_Ca1_A

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

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`).

$$\frac{d}{dt}\text{CamT\_Ca1\_A} = v_{71} + v_{92} + v_{94} + v_{96} + v_{136} - v_{75} - v_{79} - v_{80} - v_{81} - v_{140}$$

$$(1319)$$

11.33 Species `CamT_Ca1_B`

Name CamT_Ca1_B

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

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`).

$$\frac{d}{dt}\text{CamT\_Ca1\_B} = v_{72} + v_{91} + v_{98} + v_{100} + v_{137} - v_{76} - v_{82} - v_{83} - v_{84} - v_{141}$$

$$(1320)$$

11.34 Species `CamT_Ca1_C`

Name CamT_Ca1_C

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

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`).

$$\frac{d}{dt}\text{CamT\_Ca1\_C} = v_{73} + v_{93} + v_{97} + v_{102} + v_{138} - v_{77} - v_{85} - v_{86} - v_{87} - v_{142}$$

$$(1321)$$

11.35 Species `CamT_Ca1_D`

Name CamT_Ca1_D

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

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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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca1\_D} = v_{74} + v_{95} + v_{99} + v_{101} + v_{139} - v_{78} - v_{88} - v_{89} - v_{90} - v_{143}$$
(1322)

11.36 Species `CamT_Ca2_AB`

Name CamT_Ca2_AB

Initial concentration $0\,\mathrm{mol}\cdot\mathrm{l}^{-1}$

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca2\_AB} = v_{79} + v_{82} + v_{117} + v_{144} + v_{357} - v_{91} - v_{92} - v_{103} - v_{104} - v_{150}$$
(1323)

11.37 Species `CamT_Ca2_AC`

Name CamT_Ca2_AC

Initial concentration $0\,\mathrm{mol}\cdot\mathrm{l}^{-1}$

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca2\_AC} = v_{80} + v_{85} + v_{115} + v_{120} + v_{145} - v_{93} - v_{94} - v_{105} - v_{106} - v_{151}$$
(1324)

11.38 Species `CamT_Ca2_AD`

Name CamT_Ca2_AD

Initial concentration $0\,\mathrm{mol}\cdot\mathrm{l}^{-1}$

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca2\_AD} = v_{81} + v_{88} + v_{118} + v_{121} + v_{146} - v_{95} - v_{96} - v_{107} - v_{108} - v_{152}$$
(1325)

11.39 Species `CamT_Ca2_BC`

Name CamT_Ca2_BC

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca2\_BC} = v_{83} + v_{86} + v_{116} + v_{123} + v_{147} - v_{97} - v_{98} - v_{109} - v_{110} - v_{153}$$

$$(1326)$$

11.40 Species `CamT_Ca2_BD`

Name CamT_Ca2_BD

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca2\_BD} = v_{84} + v_{89} + v_{119} + v_{124} + v_{148} - v_{99} - v_{100} - v_{111} - v_{112} - v_{154}$$

$$(1327)$$

11.41 Species `CamT_Ca2_CD`

Name CamT_Ca2_CD

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca2\_CD} = v_{87} + v_{90} + v_{122} + v_{125} + v_{149} - v_{101} - v_{102} - v_{113} - v_{114} - v_{155}$$

$$(1328)$$

11.42 Species `CamT_Ca3_ABC`

Name CamT_Ca3_ABC

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca3\_ABC} = v_{103} + v_{105} + v_{109} + v_{130} + v_{156} \\ - v_{115} - v_{116} - v_{126} - v_{160} - v_{357}$$

(1329)

11.43 Species `CamT_Ca3_ABD`

Name CamT_Ca3_ABD

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca3\_ABD} = v_{104} + v_{107} + v_{111} + v_{131} + v_{157} \\ - v_{117} - v_{118} - v_{119} - v_{127} - v_{161}$$

(1330)

11.44 Species `CamT_Ca3_ACD`

Name CamT_Ca3_ACD

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca3\_ACD} = v_{106} + v_{108} + v_{113} + v_{132} + v_{158} \\ - v_{120} - v_{121} - v_{122} - v_{128} - v_{162}$$

(1331)

11.45 Species `CamT_Ca3_BCD`

Name CamT_Ca3_BCD

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`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamT\_Ca3\_BCD} = v_{110} + v_{112} + v_{114} + v_{133} + v_{159} \\ - v_{123} - v_{124} - v_{125} - v_{129} - v_{163}$$

(1332)

11.46 Species `CamT_Ca4_ABCD`

Name CamT_Ca4_ABCD

Initial concentration $0\,\text{mol}\cdot l^{-1}$

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`).

$$\frac{d}{dt}\text{CamT\_Ca4\_ABCD} = v_{126} + v_{127} + v_{128} + v_{129} + v_{164} \tag{1333}$$
$$- v_{130} - v_{131} - v_{132} - v_{133} - v_{165}$$

11.47 Species `CamR_CaMKII`

Name CamR_CaMKII

Initial concentration $0\,\text{mol}\cdot l^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_175`, `reaction_223`, `reaction_224`, `reaction_225`, `reaction_226`, `reaction_352` and as a product in `reaction_159`, `reaction_227`, `reaction_228`, `reaction_229`, `reaction_350`, `reaction_458`).

$$\frac{d}{dt}\text{CamR\_CaMKII} = v_{166} + v_{233} + v_{234} + v_{235} + v_{356} + v_{528} \tag{1334}$$
$$- v_{182} - v_{229} - v_{230} - v_{231} - v_{232} - v_{358}$$

11.48 Species `CamR_Ca1_A_CaMKII`

Name CamR_Ca1_A_CaMKII

Initial concentration $0\,\text{mol}\cdot l^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_176`, `reaction_227`, `reaction_230`, `reaction_231`, `reaction_232`, `reaction_353` and as a product in `reaction_160`, `reaction_223`, `reaction_243`, `reaction_245`, `reaction_247`, `reaction_461`).

$$\frac{d}{dt}\text{CamR\_Ca1\_A\_CaMKII} = v_{167} + v_{229} + v_{249} + v_{251} + v_{253} + v_{531} \tag{1335}$$
$$- v_{183} - v_{233} - v_{236} - v_{237} - v_{238} - v_{359}$$

11.49 Species `CamR_Ca1_B_CaMKII`

Name CamR_Ca1_B_CaMKII

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_177`, `reaction_233`, `reaction_234`, `reaction_235`, `reaction_350`, `reaction_354` and as a product in `reaction-_161`, `reaction_224`, `reaction_242`, `reaction_249`, `reaction_251`, `reaction_464`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_B\_CaMKII} = v_{168} + v_{230} + v_{248} + v_{255} + v_{257} + v_{534} \tag{1336}$$
$$- v_{184} - v_{239} - v_{240} - v_{241} - v_{356} - v_{360}$$

11.50 Species `CamR_Ca1_C_CaMKII`

Name CamR_Ca1_C_CaMKII

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_178`, `reaction_228`, `reaction_236`, `reaction_237`, `reaction_238`, `reaction_355` and as a product in `reaction-_162`, `reaction_225`, `reaction_244`, `reaction_248`, `reaction_253`, `reaction_467`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_C\_CaMKII} = v_{169} + v_{231} + v_{250} + v_{254} + v_{259} + v_{537} \tag{1337}$$
$$- v_{185} - v_{234} - v_{242} - v_{243} - v_{244} - v_{361}$$

11.51 Species `CamR_Ca1_D_CaMKII`

Name CamR_Ca1_D_CaMKII

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_179`, `reaction_229`, `reaction_239`, `reaction_240`, `reaction_241`, `reaction_356` and as a product in `reaction-_163`, `reaction_226`, `reaction_246`, `reaction_250`, `reaction_252`, `reaction_470`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_D\_CaMKII} = v_{170} + v_{232} + v_{252} + v_{256} + v_{258} + v_{540} \tag{1338}$$
$$- v_{186} - v_{235} - v_{245} - v_{246} - v_{247} - v_{362}$$

11.52 Species `CamR_Ca2_AB_CaMKII`

Name CamR_Ca2_AB_CaMKII

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_180`, `reaction_242`, `reaction_243`, `reaction_254`, `reaction_255`, `reaction_357` and as a product in `reaction_164`, `reaction_230`, `reaction_233`, `reaction_266`, `reaction_269`, `reaction_473`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca2\_AB\_CaMKII} = v_{171} + v_{236} + v_{239} + v_{272} + v_{275} + v_{543} \tag{1339}$$
$$- v_{187} - v_{248} - v_{249} - v_{260} - v_{261} - v_{363}$$

11.53 Species `CamR_Ca2_AC_CaMKII`

Name CamR_Ca2_AC_CaMKII

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_181`, `reaction_244`, `reaction_245`, `reaction_256`, `reaction_257`, `reaction_358` and as a product in `reaction_165`, `reaction_231`, `reaction_236`, `reaction_267`, `reaction_272`, `reaction_476`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca2\_AC\_CaMKII} = v_{172} + v_{237} + v_{242} + v_{273} + v_{278} + v_{546} \tag{1340}$$
$$- v_{188} - v_{250} - v_{251} - v_{262} - v_{263} - v_{364}$$

11.54 Species `CamR_Ca2_AD_CaMKII`

Name CamR_Ca2_AD_CaMKII

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_182`, `reaction_246`, `reaction_247`, `reaction_258`, `reaction_259`, `reaction_359` and as a product in `reaction_166`, `reaction_232`, `reaction_239`, `reaction_270`, `reaction_273`, `reaction_479`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca2\_AD\_CaMKII} = v_{173} + v_{238} + v_{245} + v_{276} + v_{279} + v_{549} \tag{1341}$$
$$- v_{189} - v_{252} - v_{253} - v_{264} - v_{265} - v_{365}$$

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11.55 Species `CamR_Ca2_BC_CaMKII`

Name CamR_Ca2_BC_CaMKII

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_183`, `reaction_248`, `reaction_249`, `reaction_260`, `reaction_261`, `reaction_360` and as a product in `reaction_167`, `reaction_234`, `reaction_237`, `reaction_268`, `reaction_275`, `reaction_482`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_BC\_CaMKII} = v_{174} + v_{240} + v_{243} + v_{274} + v_{281} + v_{552} \\ - v_{190} - v_{254} - v_{255} - v_{266} - v_{267} - v_{366} \tag{1342}$$

11.56 Species `CamR_Ca2_BD_CaMKII`

Name CamR_Ca2_BD_CaMKII

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_184`, `reaction_250`, `reaction_251`, `reaction_262`, `reaction_263`, `reaction_361` and as a product in `reaction_168`, `reaction_235`, `reaction_240`, `reaction_271`, `reaction_276`, `reaction_485`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_BD\_CaMKII} = v_{175} + v_{241} + v_{246} + v_{277} + v_{282} + v_{555} \\ - v_{191} - v_{256} - v_{257} - v_{268} - v_{269} - v_{367} \tag{1343}$$

11.57 Species `CamR_Ca2_CD_CaMKII`

Name CamR_Ca2_CD_CaMKII

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_185`, `reaction_252`, `reaction_253`, `reaction_264`, `reaction_265`, `reaction_362` and as a product in `reaction_169`, `reaction_238`, `reaction_241`, `reaction_274`, `reaction_277`, `reaction_488`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_CD\_CaMKII} = v_{176} + v_{244} + v_{247} + v_{280} + v_{283} + v_{558} \\ - v_{192} - v_{258} - v_{259} - v_{270} - v_{271} - v_{368} \tag{1344}$$

11.58 Species `CamR_Ca3_ABC_CaMKII`

Name CamR_Ca3_ABC_CaMKII

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_186`, `reaction_266`, `reaction_267`, `reaction_268`, `reaction_281`, `reaction_363` and as a product in `reaction_170`, `reaction_254`, `reaction_256`, `reaction_260`, `reaction_285`, `reaction_491`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca3\_ABC\_CaMKII} = v_{177} + v_{260} + v_{262} + v_{266} + v_{291} + v_{561} \qquad (1345)$$
$$- v_{193} - v_{272} - v_{273} - v_{274} - v_{287} - v_{369}$$

11.59 Species `CamR_Ca3_ABD_CaMKII`

Name CamR_Ca3_ABD_CaMKII

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_187`, `reaction_269`, `reaction_270`, `reaction_271`, `reaction_280`, `reaction_364` and as a product in `reaction_171`, `reaction_255`, `reaction_258`, `reaction_262`, `reaction_284`, `reaction_494`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca3\_ABD\_CaMKII} = v_{178} + v_{261} + v_{264} + v_{268} + v_{290} + v_{564} \qquad (1346)$$
$$- v_{194} - v_{275} - v_{276} - v_{277} - v_{286} - v_{370}$$

11.60 Species `CamR_Ca3_ACD_CaMKII`

Name CamR_Ca3_ACD_CaMKII

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in twelve reactions (as a reactant in `reaction_188`, `reaction_272`, `reaction_273`, `reaction_274`, `reaction_279`, `reaction_365` and as a product in `reaction_172`, `reaction_257`, `reaction_259`, `reaction_264`, `reaction_283`, `reaction_497`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca3\_ACD\_CaMKII} = v_{179} + v_{263} + v_{265} + v_{270} + v_{289} + v_{567} \qquad (1347)$$
$$- v_{195} - v_{278} - v_{279} - v_{280} - v_{285} - v_{371}$$

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11.61 Species `CamR_Ca3_BCD_CaMKII`

Name CamR_Ca3_BCD_CaMKII

Initial concentration $0 \, \mathrm{mol \cdot l^{-1}}$

This species takes part in twelve reactions (as a reactant in `reaction_189`, `reaction_275`, `reaction_276`, `reaction_277`, `reaction_278`, `reaction_366` and as a product in `reaction-_173`, `reaction_261`, `reaction_263`, `reaction_265`, `reaction_282`, `reaction_500`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_Ca3\_BCD\_CaMKII} = v_{180} + v_{267} + v_{269} + v_{271} + v_{288} + v_{570} \qquad (1348)$$
$$- v_{196} - v_{281} - v_{282} - v_{283} - v_{284} - v_{372}$$

11.62 Species `CamR_Ca4_ABCD_CaMKII`

Name CamR_Ca4_ABCD_CaMKII

Initial concentration $0 \, \mathrm{mol \cdot l^{-1}}$

This species takes part in twelve reactions (as a reactant in `reaction_190`, `reaction_282`, `reaction_283`, `reaction_284`, `reaction_285`, `reaction_367` and as a product in `reaction-_174`, `reaction_278`, `reaction_279`, `reaction_280`, `reaction_281`, `reaction_503`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_Ca4\_ABCD\_CaMKII} = v_{181} + v_{284} + v_{285} + v_{286} + v_{287} + v_{573} \qquad (1349)$$
$$- v_{197} - v_{288} - v_{289} - v_{290} - v_{291} - v_{373}$$

11.63 Species `CamR_PP2B`

Name CamR_PP2B

Initial concentration $0 \, \mathrm{mol \cdot l^{-1}}$

This species takes part in 13 reactions (as a reactant in `reaction_207`, `reaction_286`, `reaction-_287`, `reaction_288`, `reaction_289`, `reaction_403` and as a product in `reaction_191`, `reaction-_290`, `reaction_291`, `reaction_292`, `reaction_293`, `reaction_404`, `reaction_405`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_PP2B} = v_{198} + v_{296} + v_{297} + v_{298} + v_{299} + v_{474} + v_{475} \qquad (1350)$$
$$- v_{213} - v_{292} - v_{293} - v_{294} - v_{295} - v_{473}$$

11.64 Species `CamR_Ca1_A_PP2B`

Name CamR_Ca1_A_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_208`, `reaction_290`, `reaction_294`, `reaction_295`, `reaction_296`, `reaction_406` and as a product in `reaction_192`, `reaction_286`, `reaction_307`, `reaction_309`, `reaction_311`, `reaction_407`, `reaction_408`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_A\_PP2B} = v_{199} + v_{292} + v_{313} + v_{315} + v_{317} + v_{477} + v_{478} \tag{1351}$$
$$- v_{214} - v_{296} - v_{300} - v_{301} - v_{302} - v_{476}$$

11.65 Species `CamR_Ca1_B_PP2B`

Name CamR_Ca1_B_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_209`, `reaction_291`, `reaction_297`, `reaction_298`, `reaction_299`, `reaction_409` and as a product in `reaction_193`, `reaction_287`, `reaction_306`, `reaction_313`, `reaction_315`, `reaction_410`, `reaction_411`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_B\_PP2B} = v_{200} + v_{293} + v_{312} + v_{319} + v_{321} + v_{480} + v_{481} \tag{1352}$$
$$- v_{215} - v_{297} - v_{303} - v_{304} - v_{305} - v_{479}$$

11.66 Species `CamR_Ca1_C_PP2B`

Name CamR_Ca1_C_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_210`, `reaction_292`, `reaction_300`, `reaction_301`, `reaction_302`, `reaction_412` and as a product in `reaction_194`, `reaction_288`, `reaction_308`, `reaction_312`, `reaction_317`, `reaction_413`, `reaction_414`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_C\_PP2B} = v_{201} + v_{294} + v_{314} + v_{318} + v_{323} + v_{483} + v_{484} \tag{1353}$$
$$- v_{216} - v_{298} - v_{306} - v_{307} - v_{308} - v_{482}$$

11.67 Species `CamR_Ca1_D_PP2B`

Name CamR_Ca1_D_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_211`, `reaction_293`, `reaction-_303`, `reaction_304`, `reaction_305`, `reaction_415` and as a product in `reaction_195`, `reaction-_289`, `reaction_310`, `reaction_314`, `reaction_316`, `reaction_416`, `reaction_417`).

$$
\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_D\_PP2B} = v_{202} + v_{295} + v_{316} + v_{320} + v_{322} + v_{486} + v_{487} \quad (1354)
$$
$$
- v_{217} - v_{299} - v_{309} - v_{310} - v_{311} - v_{485}
$$

11.68 Species `CamR_Ca2_AB_PP2B`

Name CamR_Ca2_AB_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_212`, `reaction_306`, `reaction-_307`, `reaction_318`, `reaction_319`, `reaction_418` and as a product in `reaction_196`, `reaction-_294`, `reaction_297`, `reaction_332`, `reaction_335`, `reaction_419`, `reaction_420`).

$$
\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca2\_AB\_PP2B} = v_{203} + v_{300} + v_{303} + v_{338} + v_{341} + v_{489} + v_{490} \quad (1355)
$$
$$
- v_{218} - v_{312} - v_{313} - v_{324} - v_{325} - v_{488}
$$

11.69 Species `CamR_Ca2_AC_PP2B`

Name CamR_Ca2_AC_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_213`, `reaction_308`, `reaction-_309`, `reaction_320`, `reaction_321`, `reaction_421` and as a product in `reaction_295`, `reaction-_300`, `reaction_331`, `reaction_338`, `reaction_422`, `reaction_423`, `PP2B_binding_to-_CamR_Ca2_AC`).

$$
\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca2\_AC\_PP2B} = v_{301} + v_{306} + v_{337} + v_{344} + v_{492} + v_{493} + v_{574} \quad (1356)
$$
$$
- v_{219} - v_{314} - v_{315} - v_{326} - v_{327} - v_{491}
$$

11.70 Species `CamR_Ca2_AD_PP2B`

Name CamR_Ca2_AD_PP2B

Initial concentration $0 \, \mathrm{mol} \cdot \mathrm{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_214`, `reaction_310`, `reaction-_311`, `reaction_322`, `reaction_323`, `reaction_424` and as a product in `reaction_198`, `reaction-_296`, `reaction_303`, `reaction_334`, `reaction_337`, `reaction_425`, `reaction_426`).

$$
\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_Ca2\_AD\_PP2B} = v_{204} + v_{302} + v_{309} + v_{340} + v_{343} + v_{495} + v_{496} \quad (1357)
$$
$$
- v_{220} - v_{316} - v_{317} - v_{328} - v_{329} - v_{494}
$$

11.71 Species `CamR_Ca2_BC_PP2B`

Name CamR_Ca2_BC_PP2B

Initial concentration $0 \, \mathrm{mol} \cdot \mathrm{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_215`, `reaction_312`, `reaction-_313`, `reaction_324`, `reaction_325`, `reaction_427` and as a product in `reaction_199`, `reaction-_298`, `reaction_301`, `reaction_330`, `reaction_341`, `reaction_428`, `reaction_429`).

$$
\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_Ca2\_BC\_PP2B} = v_{205} + v_{304} + v_{307} + v_{336} + v_{347} + v_{498} + v_{499} \quad (1358)
$$
$$
- v_{221} - v_{318} - v_{319} - v_{330} - v_{331} - v_{497}
$$

11.72 Species `CamR_Ca2_BD_PP2B`

Name CamR_Ca2_BD_PP2B

Initial concentration $0 \, \mathrm{mol} \cdot \mathrm{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_216`, `reaction_314`, `reaction-_315`, `reaction_326`, `reaction_327`, `reaction_430` and as a product in `reaction_200`, `reaction-_299`, `reaction_304`, `reaction_333`, `reaction_340`, `reaction_431`, `reaction_432`).

$$
\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_Ca2\_BD\_PP2B} = v_{206} + v_{305} + v_{310} + v_{339} + v_{346} + v_{501} + v_{502} \quad (1359)
$$
$$
- v_{222} - v_{320} - v_{321} - v_{332} - v_{333} - v_{500}
$$

11.73 Species `CamR_Ca2_CD_PP2B`

Name CamR_Ca2_CD_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_217`, `reaction_316`, `reaction-_317`, `reaction_328`, `reaction_329`, `reaction_433` and as a product in `reaction_201`, `reaction-_302`, `reaction_305`, `reaction_336`, `reaction_339`, `reaction_434`, `reaction_435`).

$$\frac{d}{dt} \text{CamR\_Ca2\_CD\_PP2B} = v_{207} + v_{308} + v_{311} + v_{342} + v_{345} + v_{504} + v_{505} \quad (1360)$$
$$- v_{223} - v_{322} - v_{323} - v_{334} - v_{335} - v_{503}$$

11.74 Species `CamR_Ca3_ABC_PP2B`

Name CamR_Ca3_ABC_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_218`, `reaction_330`, `reaction-_331`, `reaction_332`, `reaction_342`, `reaction_436` and as a product in `reaction_202`, `reaction-_318`, `reaction_320`, `reaction_324`, `reaction_349`, `reaction_437`, `reaction_438`).

$$\frac{d}{dt} \text{CamR\_Ca3\_ABC\_PP2B} = v_{208} + v_{324} + v_{326} + v_{330} + v_{355} + v_{507} + v_{508} \quad (1361)$$
$$- v_{224} - v_{336} - v_{337} - v_{338} - v_{348} - v_{506}$$

11.75 Species `CamR_Ca3_ABD_PP2B`

Name CamR_Ca3_ABD_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_219`, `reaction_333`, `reaction-_334`, `reaction_335`, `reaction_343`, `reaction_439` and as a product in `reaction_203`, `reaction-_319`, `reaction_322`, `reaction_326`, `reaction_348`, `reaction_440`, `reaction_441`).

$$\frac{d}{dt} \text{CamR\_Ca3\_ABD\_PP2B} = v_{209} + v_{325} + v_{328} + v_{332} + v_{354} + v_{510} + v_{511} \quad (1362)$$
$$- v_{225} - v_{339} - v_{340} - v_{341} - v_{349} - v_{509}$$

11.76 Species `CamR_Ca3_ACD_PP2B`

Name CamR_Ca3_ACD_PP2B

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_220`, `reaction_336`, `reaction_337`, `reaction_338`, `reaction_344`, `reaction_442` and as a product in `reaction_204`, `reaction_321`, `reaction_323`, `reaction_328`, `reaction_347`, `reaction_443`, `reaction_444`).

$$\frac{d}{dt}\text{CamR\_Ca3\_ACD\_PP2B} = v_{210} + v_{327} + v_{329} + v_{334} + v_{353} + v_{513} + v_{514} \quad (1363)$$
$$- v_{226} - v_{342} - v_{343} - v_{344} - v_{350} - v_{512}$$

11.77 Species `CamR_Ca3_BCD_PP2B`

Name CamR_Ca3_BCD_PP2B

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_221`, `reaction_339`, `reaction_340`, `reaction_341`, `reaction_345`, `reaction_445` and as a product in `reaction_205`, `reaction_325`, `reaction_327`, `reaction_329`, `reaction_346`, `reaction_446`, `reaction_447`).

$$\frac{d}{dt}\text{CamR\_Ca3\_BCD\_PP2B} = v_{211} + v_{331} + v_{333} + v_{335} + v_{352} + v_{516} + v_{517} \quad (1364)$$
$$- v_{227} - v_{345} - v_{346} - v_{347} - v_{351} - v_{515}$$

11.78 Species `CamR_Ca4_ABCD_PP2B`

Name CamR_Ca4_ABCD_PP2B

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_222`, `reaction_346`, `reaction_347`, `reaction_348`, `reaction_349`, `reaction_448` and as a product in `reaction_206`, `reaction_342`, `reaction_343`, `reaction_344`, `reaction_345`, `reaction_449`, `reaction_450`).

$$\frac{d}{dt}\text{CamR\_Ca4\_ABCD\_PP2B} = v_{212} + v_{348} + v_{349} + v_{350} + v_{351} + v_{519} + v_{520} \quad (1365)$$
$$- v_{228} - v_{352} - v_{353} - v_{354} - v_{355} - v_{518}$$

11.79 Species `CaMKIIp`

Name CaMKIIp

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in 34 reactions (as a reactant in `reaction_368`, `reaction_370`, `reaction-_372`, `reaction_374`, `reaction_376`, `reaction_378`, `reaction_380`, `reaction_382`, `reaction-_384`, `reaction_386`, `reaction_388`, `reaction_390`, `reaction_392`, `reaction_394`, `reaction-_396`, `reaction_398`, `reaction_453` and as a product in `reaction_369`, `reaction_371`, `reaction-_373`, `reaction_375`, `reaction_377`, `reaction_379`, `reaction_381`, `reaction_383`, `reaction-_385`, `reaction_387`, `reaction_389`, `reaction_391`, `reaction_393`, `reaction_395`, `reaction-_397`, `reaction_399`, `reaction_454`).

$$
\begin{aligned}
\frac{\mathrm{d}}{\mathrm{d}t}\text{CaMKIIp} = {}& v_{375} + v_{377} + v_{379} + v_{381} + v_{383} + v_{385} + v_{387} + v_{389} + v_{391} \\
& + v_{393} + v_{395} + v_{397} + v_{399} + v_{401} + v_{403} + v_{405} + v_{524} - v_{374} \\
& - v_{376} - v_{378} - v_{380} - v_{382} - v_{384} - v_{386} - v_{388} - v_{390} \\
& - v_{392} - v_{394} - v_{396} - v_{398} - v_{400} - v_{402} - v_{404} - v_{523}
\end{aligned}
$$

$$(1366)$$

11.80 Species `CamR_CaMKIIp`

Name CamR_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_369`, `reaction_504`, `reaction-_505`, `reaction_506`, `reaction_507`, `reaction_456` and as a product in `reaction_352`, `reaction-_368`, `reaction_508`, `reaction_567`, `reaction_509`, `reaction_510`, `reaction_457`).

$$
\begin{aligned}
\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_CaMKIIp} = {}& v_{358} + v_{374} + v_{410} + v_{411} + v_{412} + v_{413} + v_{527} \\
& - v_{375} - v_{406} - v_{407} - v_{408} - v_{409} - v_{526}
\end{aligned}
$$

$$(1367)$$

11.81 Species `CamR_Ca1_A_CaMKIIp`

Name CamR_Ca1_A_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot 1^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_371`, `reaction_508`, `reaction-_511`, `reaction_512`, `reaction_513`, `reaction_459` and as a product in `reaction_353`, `reaction-_370`, `reaction_504`, `reaction_524`, `reaction_526`, `reaction_528`, `reaction_460`).

$$
\begin{aligned}
\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca1\_A\_CaMKIIp} = {}& v_{359} + v_{376} + v_{406} + v_{427} + v_{429} + v_{431} + v_{530} \\
& - v_{377} - v_{410} - v_{414} - v_{415} - v_{416} - v_{529}
\end{aligned}
$$

$$(1368)$$

11.82 Species `CamR_Ca1_B_CaMKIIp`

Name CamR_Ca1_B_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_373`, `reaction_567`, `reaction_514`, `reaction_515`, `reaction_516`, `reaction_462` and as a product in `reaction_354`, `reaction_372`, `reaction_505`, `reaction_523`, `reaction_530`, `reaction_532`, `reaction_463`).

$$
\frac{d}{dt}\text{CamR\_Ca1\_B\_CaMKIIp} = v_{360} + v_{378} + v_{407} + v_{426} + v_{433} + v_{435} + v_{533} \quad (1369)
$$
$$
- v_{379} - v_{411} - v_{417} - v_{418} - v_{419} - v_{532}
$$

11.83 Species `CamR_Ca1_C_CaMKIIp`

Name CamR_Ca1_C_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_375`, `reaction_509`, `reaction_517`, `reaction_518`, `reaction_519`, `reaction_465` and as a product in `reaction_355`, `reaction_374`, `reaction_506`, `reaction_525`, `reaction_529`, `reaction_534`, `reaction_466`).

$$
\frac{d}{dt}\text{CamR\_Ca1\_C\_CaMKIIp} = v_{361} + v_{380} + v_{408} + v_{428} + v_{432} + v_{437} + v_{536} \quad (1370)
$$
$$
- v_{381} - v_{412} - v_{420} - v_{421} - v_{422} - v_{535}
$$

11.84 Species `CamR_Ca1_D_CaMKIIp`

Name CamR_Ca1_D_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_377`, `reaction_510`, `reaction_520`, `reaction_521`, `reaction_522`, `reaction_468` and as a product in `reaction_356`, `reaction_376`, `reaction_507`, `reaction_527`, `reaction_531`, `reaction_533`, `reaction_469`).

$$
\frac{d}{dt}\text{CamR\_Ca1\_D\_CaMKIIp} = v_{362} + v_{382} + v_{409} + v_{430} + v_{434} + v_{436} + v_{539} \quad (1371)
$$
$$
- v_{383} - v_{413} - v_{423} - v_{424} - v_{425} - v_{538}
$$

11.85 Species `CamR_Ca2_AB_CaMKIIp`

Name CamR_Ca2_AB_CaMKIIp

Initial concentration $0 \, \mathrm{mol} \cdot \mathrm{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_379`, `reaction_523`, `reaction-_524`, `reaction_535`, `reaction_536`, `reaction_471` and as a product in `reaction_357`, `reaction-_378`, `reaction_511`, `reaction_514`, `reaction_547`, `reaction_550`, `reaction_472`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_Ca2\_AB\_CaMKIIp} = v_{363} + v_{384} + v_{414} + v_{417} + v_{450} + v_{453} + v_{542} \qquad (1372)$$
$$- v_{385} - v_{426} - v_{427} - v_{438} - v_{439} - v_{541}$$

11.86 Species `CamR_Ca2_AC_CaMKIIp`

Name CamR_Ca2_AC_CaMKIIp

Initial concentration $0 \, \mathrm{mol} \cdot \mathrm{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_381`, `reaction_525`, `reaction-_526`, `reaction_537`, `reaction_538`, `reaction_474` and as a product in `reaction_358`, `reaction-_380`, `reaction_512`, `reaction_517`, `reaction_548`, `reaction_553`, `reaction_475`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_Ca2\_AC\_CaMKIIp} = v_{364} + v_{386} + v_{415} + v_{420} + v_{451} + v_{456} + v_{545} \qquad (1373)$$
$$- v_{387} - v_{428} - v_{429} - v_{440} - v_{441} - v_{544}$$

11.87 Species `CamR_Ca2_AD_CaMKIIp`

Name CamR_Ca2_AD_CaMKIIp

Initial concentration $0 \, \mathrm{mol} \cdot \mathrm{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_383`, `reaction_527`, `reaction-_528`, `reaction_539`, `reaction_540`, `reaction_477` and as a product in `reaction_359`, `reaction-_382`, `reaction_513`, `reaction_520`, `reaction_551`, `reaction_554`, `reaction_478`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CamR\_Ca2\_AD\_CaMKIIp} = v_{365} + v_{388} + v_{416} + v_{423} + v_{454} + v_{457} + v_{548} \qquad (1374)$$
$$- v_{389} - v_{430} - v_{431} - v_{442} - v_{443} - v_{547}$$

11.88 Species `CamR_Ca2_BC_CaMKIIp`

Name CamR_Ca2_BC_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_385`, `reaction_529`, `reaction-_530`, `reaction_541`, `reaction_542`, `reaction_480` and as a product in `reaction_360`, `reaction-_384`, `reaction_515`, `reaction_518`, `reaction_549`, `reaction_556`, `reaction_481`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_BC\_CaMKIIp} = v_{366} + v_{390} + v_{418} + v_{421} + v_{452} + v_{459} + v_{551} \quad (1375)$$
$$- v_{391} - v_{432} - v_{433} - v_{444} - v_{445} - v_{550}$$

11.89 Species `CamR_Ca2_BD_CaMKIIp`

Name CamR_Ca2_BD_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_387`, `reaction_531`, `reaction-_532`, `reaction_543`, `reaction_544`, `reaction_483` and as a product in `reaction_361`, `reaction-_386`, `reaction_516`, `reaction_521`, `reaction_552`, `reaction_557`, `reaction_484`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_BD\_CaMKIIp} = v_{367} + v_{392} + v_{419} + v_{424} + v_{455} + v_{460} + v_{554} \quad (1376)$$
$$- v_{393} - v_{434} - v_{435} - v_{446} - v_{447} - v_{553}$$

11.90 Species `CamR_Ca2_CD_CaMKIIp`

Name CamR_Ca2_CD_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_389`, `reaction_533`, `reaction-_534`, `reaction_545`, `reaction_546`, `reaction_486` and as a product in `reaction_362`, `reaction-_388`, `reaction_519`, `reaction_522`, `reaction_555`, `reaction_558`, `reaction_487`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca2\_CD\_CaMKIIp} = v_{368} + v_{394} + v_{422} + v_{425} + v_{458} + v_{461} + v_{557} \quad (1377)$$
$$- v_{395} - v_{436} - v_{437} - v_{448} - v_{449} - v_{556}$$

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11.91 Species `CamR_Ca3_ABC_CaMKIIp`

Name CamR_Ca3_ABC_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_391`, `reaction_547`, `reaction_548`, `reaction_549`, `reaction_562`, `reaction_489` and as a product in `reaction_363`, `reaction_390`, `reaction_535`, `reaction_537`, `reaction_541`, `reaction_566`, `reaction_490`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca3\_ABC\_CaMKIIp} = v_{369} + v_{396} + v_{438} + v_{440} + v_{444} + v_{469} + v_{560} \qquad (1378)$$
$$- v_{397} - v_{450} - v_{451} - v_{452} - v_{465} - v_{559}$$

11.92 Species `CamR_Ca3_ABD_CaMKIIp`

Name CamR_Ca3_ABD_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_393`, `reaction_550`, `reaction_551`, `reaction_552`, `reaction_561`, `reaction_492` and as a product in `reaction_364`, `reaction_392`, `reaction_536`, `reaction_539`, `reaction_543`, `reaction_565`, `reaction_493`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca3\_ABD\_CaMKIIp} = v_{370} + v_{398} + v_{439} + v_{442} + v_{446} + v_{468} + v_{563} \qquad (1379)$$
$$- v_{399} - v_{453} - v_{454} - v_{455} - v_{464} - v_{562}$$

11.93 Species `CamR_Ca3_ACD_CaMKIIp`

Name CamR_Ca3_ACD_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_395`, `reaction_553`, `reaction_554`, `reaction_555`, `reaction_560`, `reaction_495` and as a product in `reaction_365`, `reaction_394`, `reaction_538`, `reaction_540`, `reaction_545`, `reaction_564`, `reaction_496`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca3\_ACD\_CaMKIIp} = v_{371} + v_{400} + v_{441} + v_{443} + v_{448} + v_{467} + v_{566} \qquad (1380)$$
$$- v_{401} - v_{456} - v_{457} - v_{458} - v_{463} - v_{565}$$

11.94 Species `CamR_Ca3_BCD_CaMKIIp`

Name CamR_Ca3_BCD_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_397`, `reaction_556`, `reaction-_557`, `reaction_558`, `reaction_559`, `reaction_498` and as a product in `reaction_366`, `reaction-_396`, `reaction_542`, `reaction_544`, `reaction_546`, `reaction_563`, `reaction_499`).

$$\frac{d}{dt}\text{CamR\_Ca3\_BCD\_CaMKIIp} = v_{372} + v_{402} + v_{445} + v_{447} + v_{449} + v_{466} + v_{569} \tag{1381}$$
$$- v_{403} - v_{459} - v_{460} - v_{461} - v_{462} - v_{568}$$

11.95 Species `CamR_Ca4_ABCD_CaMKIIp`

Name CamR_Ca4_ABCD_CaMKIIp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 13 reactions (as a reactant in `reaction_399`, `reaction_563`, `reaction-_564`, `reaction_565`, `reaction_566`, `reaction_501` and as a product in `reaction_367`, `reaction-_398`, `reaction_559`, `reaction_560`, `reaction_561`, `reaction_562`, `reaction_502`).

$$\frac{d}{dt}\text{CamR\_Ca4\_ABCD\_CaMKIIp} = v_{373} + v_{404} + v_{462} + v_{463} + v_{464} + v_{465} + v_{572}$$
$$- v_{405} - v_{466} - v_{467} - v_{468} - v_{469} - v_{571}$$
$$\tag{1382}$$

11.96 Species `Dp`

Name Dp

Initial concentration $0 \, \text{mol} \cdot l^{-1}$

This species takes part in 35 reactions (as a reactant in `reaction_403`, `reaction_406`, `reaction-_409`, `reaction_412`, `reaction_415`, `reaction_418`, `reaction_421`, `reaction_424`, `reaction-_427`, `reaction_430`, `reaction_433`, `reaction_436`, `reaction_439`, `reaction_442`, `reaction-_445`, `reaction_448`, `reaction_451` and as a product in `reaction_402`, `reaction_404`, `reaction-_407`, `reaction_410`, `reaction_413`, `reaction_416`, `reaction_419`, `reaction_422`, `reaction-_425`, `reaction_428`, `reaction_431`, `reaction_434`, `reaction_437`, `reaction_440`, `reaction-_443`, `reaction_446`, `reaction_449`, `reaction_452`).

$$\frac{d}{dt}\text{Dp} = v_{472} + v_{474} + v_{477} + v_{480} + v_{483} + v_{486} + v_{489} + v_{492} + v_{495}$$
$$+ v_{498} + v_{501} + v_{504} + v_{507} + v_{510} + v_{513} + v_{516} + v_{519} + v_{522} \tag{1383}$$
$$- v_{473} - v_{476} - v_{479} - v_{482} - v_{485} - v_{488} - v_{491} - v_{494} - v_{497}$$
$$- v_{500} - v_{503} - v_{506} - v_{509} - v_{512} - v_{515} - v_{518} - v_{521}$$

11.97 Species `D_PKA`

Name D_PKA

Initial concentration $0\,\text{mol}\cdot\text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_401`, `reaction_402` and as a product in `reaction_400`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{D\_PKA} = v_{470} - v_{471} - v_{472} \tag{1384}$$

11.98 Species `Dp_CamR_PP2B`

Name Dp_CamR_PP2B

Initial concentration $0\,\text{mol}\cdot\text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_404`, `reaction_405` and as a product in `reaction_403`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{Dp\_CamR\_PP2B} = v_{473} - v_{474} - v_{475} \tag{1385}$$

11.99 Species `Dp_CamR_Ca1_A_PP2B`

Name Dp_CamR_Ca1_A_PP2B

Initial concentration $0\,\text{mol}\cdot\text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_407`, `reaction_408` and as a product in `reaction_406`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{Dp\_CamR\_Ca1\_A\_PP2B} = v_{476} - v_{477} - v_{478} \tag{1386}$$

11.100 Species `Dp_CamR_Ca1_B_PP2B`

Name Dp_CamR_Ca1_B_PP2B

Initial concentration $0\,\text{mol}\cdot\text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_410`, `reaction_411` and as a product in `reaction_409`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{Dp\_CamR\_Ca1\_B\_PP2B} = v_{479} - v_{480} - v_{481} \tag{1387}$$

11.101 Species `Dp_CamR_Ca1_C_PP2B`

Name Dp_CamR_Ca1_C_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_413`, `reaction_414` and as a product in `reaction_412`).

$$\frac{\text{d}}{\text{d}t}\text{Dp\_CamR\_Ca1\_C\_PP2B} = v_{482} - v_{483} - v_{484} \tag{1388}$$

11.102 Species `Dp_CamR_Ca1_D_PP2B`

Name Dp_CamR_Ca1_D_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_416`, `reaction_417` and as a product in `reaction_415`).

$$\frac{\text{d}}{\text{d}t}\text{Dp\_CamR\_Ca1\_D\_PP2B} = v_{485} - v_{486} - v_{487} \tag{1389}$$

11.103 Species `Dp_CamR_Ca2_AB_PP2B`

Name Dp_CamR_Ca2_AB_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_419`, `reaction_420` and as a product in `reaction_418`).

$$\frac{\text{d}}{\text{d}t}\text{Dp\_CamR\_Ca2\_AB\_PP2B} = v_{488} - v_{489} - v_{490} \tag{1390}$$

11.104 Species `Dp_CamR_Ca2_AC_PP2B`

Name Dp_CamR_Ca2_AC_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_422`, `reaction_423` and as a product in `reaction_421`).

$$\frac{\text{d}}{\text{d}t}\text{Dp\_CamR\_Ca2\_AC\_PP2B} = v_{491} - v_{492} - v_{493} \tag{1391}$$

11.105 Species `Dp_CamR_Ca2_AD_PP2B`

Name Dp_CamR_Ca2_AD_PP2B

Initial concentration $0\,\mathrm{mol\cdot l^{-1}}$

This species takes part in three reactions (as a reactant in `reaction_425`, `reaction_426` and as a product in `reaction_424`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Dp\_CamR\_Ca2\_AD\_PP2B} = v_{494} - v_{495} - v_{496} \tag{1392}$$

11.106 Species `Dp_CamR_Ca2_BC_PP2B`

Name Dp_CamR_Ca2_BC_PP2B

Initial concentration $0\,\mathrm{mol\cdot l^{-1}}$

This species takes part in three reactions (as a reactant in `reaction_428`, `reaction_429` and as a product in `reaction_427`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Dp\_CamR\_Ca2\_BC\_PP2B} = v_{497} - v_{498} - v_{499} \tag{1393}$$

11.107 Species `Dp_CamR_Ca2_BD_PP2B`

Name Dp_CamR_Ca2_BD_PP2B

Initial concentration $0\,\mathrm{mol\cdot l^{-1}}$

This species takes part in three reactions (as a reactant in `reaction_431`, `reaction_432` and as a product in `reaction_430`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Dp\_CamR\_Ca2\_BD\_PP2B} = v_{500} - v_{501} - v_{502} \tag{1394}$$

11.108 Species `Dp_CamR_Ca2_CD_PP2B`

Name Dp_CamR_Ca2_CD_PP2B

Initial concentration $0\,\mathrm{mol\cdot l^{-1}}$

This species takes part in three reactions (as a reactant in `reaction_434`, `reaction_435` and as a product in `reaction_433`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Dp\_CamR\_Ca2\_CD\_PP2B} = v_{503} - v_{504} - v_{505} \tag{1395}$$

11.109 Species `Dp_CamR_Ca3_ABC_PP2B`

Name Dp_CamR_Ca3_ABC_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_437`, `reaction_438` and as a product in `reaction_436`).

$$\frac{d}{dt} \text{Dp\_CamR\_Ca3\_ABC\_PP2B} = v_{506} - v_{507} - v_{508} \tag{1396}$$

11.110 Species `Dp_CamR_Ca3_ABD_PP2B`

Name Dp_CamR_Ca3_ABD_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_440`, `reaction_441` and as a product in `reaction_439`).

$$\frac{d}{dt} \text{Dp\_CamR\_Ca3\_ABD\_PP2B} = v_{509} - v_{510} - v_{511} \tag{1397}$$

11.111 Species `Dp_CamR_Ca3_ACD_PP2B`

Name Dp_CamR_Ca3_ACD_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_443`, `reaction_444` and as a product in `reaction_442`).

$$\frac{d}{dt} \text{Dp\_CamR\_Ca3\_ACD\_PP2B} = v_{512} - v_{513} - v_{514} \tag{1398}$$

11.112 Species `Dp_CamR_Ca3_BCD_PP2B`

Name Dp_CamR_Ca3_BCD_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_446`, `reaction_447` and as a product in `reaction_445`).

$$\frac{d}{dt} \text{Dp\_CamR\_Ca3\_BCD\_PP2B} = v_{515} - v_{516} - v_{517} \tag{1399}$$

11.113 Species Dp_CamR_Ca4_ABCD_PP2B

Name Dp_CamR_Ca4_ABCD_PP2B

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_449`, `reaction_450` and as a product in `reaction_448`).

$$\frac{\text{d}}{\text{d}t}\text{Dp\_CamR\_Ca4\_ABCD\_PP2B} = v_{518} - v_{519} - v_{520} \tag{1400}$$

11.114 Species PP1a_Dp

Name PP1a_Dp

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in `reaction_452` and as a product in `reaction_451`).

$$\frac{\text{d}}{\text{d}t}\text{PP1a\_Dp} = v_{521} - v_{522} \tag{1401}$$

11.115 Species CaMKIIp_PP1a

Name CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_454`, `reaction_455` and as a product in `reaction_453`).

$$\frac{\text{d}}{\text{d}t}\text{CaMKIIp\_PP1a} = v_{523} - v_{524} - v_{525} \tag{1402}$$

11.116 Species CamR_CaMKIIp_PP1a

Name CamR_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_457`, `reaction_458` and as a product in `reaction_456`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_CaMKIIp\_PP1a} = v_{526} - v_{527} - v_{528} \tag{1403}$$

11.117 Species `CamR_Ca1_A_CaMKIIp_PP1a`

Name CamR_Ca1_A_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_460`, `reaction_461` and as a product in `reaction_459`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca1\_A\_CaMKIIp\_PP1a} = v_{529} - v_{530} - v_{531} \qquad (1404)$$

11.118 Species `CamR_Ca1_B_CaMKIIp_PP1a`

Name CamR_Ca1_B_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_463`, `reaction_464` and as a product in `reaction_462`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca1\_B\_CaMKIIp\_PP1a} = v_{532} - v_{533} - v_{534} \qquad (1405)$$

11.119 Species `CamR_Ca1_C_CaMKIIp_PP1a`

Name CamR_Ca1_C_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_466`, `reaction_467` and as a product in `reaction_465`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca1\_C\_CaMKIIp\_PP1a} = v_{535} - v_{536} - v_{537} \qquad (1406)$$

11.120 Species `CamR_Ca1_D_CaMKIIp_PP1a`

Name CamR_Ca1_D_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_469`, `reaction_470` and as a product in `reaction_468`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca1\_D\_CaMKIIp\_PP1a} = v_{538} - v_{539} - v_{540} \qquad (1407)$$

11.121 Species `CamR_Ca2_AB_CaMKIIp_PP1a`

Name CamR_Ca2_AB_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_472`, `reaction_473` and as a product in `reaction_471`).

$$\frac{\text{d}}{\text{d}t} \text{CamR\_Ca2\_AB\_CaMKIIp\_PP1a} = v_{541} - v_{542} - v_{543} \tag{1408}$$

11.122 Species `CamR_Ca2_AC_CaMKIIp_PP1a`

Name CamR_Ca2_AC_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_475`, `reaction_476` and as a product in `reaction_474`).

$$\frac{\text{d}}{\text{d}t} \text{CamR\_Ca2\_AC\_CaMKIIp\_PP1a} = v_{544} - v_{545} - v_{546} \tag{1409}$$

11.123 Species `CamR_Ca2_AD_CaMKIIp_PP1a`

Name CamR_Ca2_AD_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_478`, `reaction_479` and as a product in `reaction_477`).

$$\frac{\text{d}}{\text{d}t} \text{CamR\_Ca2\_AD\_CaMKIIp\_PP1a} = v_{547} - v_{548} - v_{549} \tag{1410}$$

11.124 Species `CamR_Ca2_BC_CaMKIIp_PP1a`

Name CamR_Ca2_BC_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_481`, `reaction_482` and as a product in `reaction_480`).

$$\frac{\text{d}}{\text{d}t} \text{CamR\_Ca2\_BC\_CaMKIIp\_PP1a} = v_{550} - v_{551} - v_{552} \tag{1411}$$

11.125 Species `CamR_Ca2_BD_CaMKIIp_PP1a`

Name CamR_Ca2_BD_CaMKIIp_PP1a

Initial concentration $0\,\text{mol}\cdot\text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_484`, `reaction_485` and as a product in `reaction_483`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca2\_BD\_CaMKIIp\_PP1a} = v_{553} - v_{554} - v_{555} \qquad (1412)$$

11.126 Species `CamR_Ca2_CD_CaMKIIp_PP1a`

Name CamR_Ca2_CD_CaMKIIp_PP1a

Initial concentration $0\,\text{mol}\cdot\text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_487`, `reaction_488` and as a product in `reaction_486`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca2\_CD\_CaMKIIp\_PP1a} = v_{556} - v_{557} - v_{558} \qquad (1413)$$

11.127 Species `CamR_Ca3_ABC_CaMKIIp_PP1a`

Name CamR_Ca3_ABC_CaMKIIp_PP1a

Initial concentration $0\,\text{mol}\cdot\text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_490`, `reaction_491` and as a product in `reaction_489`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca3\_ABC\_CaMKIIp\_PP1a} = v_{559} - v_{560} - v_{561} \qquad (1414)$$

11.128 Species `CamR_Ca3_ABD_CaMKIIp_PP1a`

Name CamR_Ca3_ABD_CaMKIIp_PP1a

Initial concentration $0\,\text{mol}\cdot\text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_493`, `reaction_494` and as a product in `reaction_492`).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{CamR\_Ca3\_ABD\_CaMKIIp\_PP1a} = v_{562} - v_{563} - v_{564} \qquad (1415)$$

11.129 Species `CamR_Ca3_ACD_CaMKIIp_PP1a`

Name CamR_Ca3_ACD_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_496`, `reaction_497` and as a product in `reaction_495`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca3\_ACD\_CaMKIIp\_PP1a} = v_{565} - v_{566} - v_{567} \qquad (1416)$$

11.130 Species `CamR_Ca3_BCD_CaMKIIp_PP1a`

Name CamR_Ca3_BCD_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_499`, `reaction_500` and as a product in `reaction_498`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca3\_BCD\_CaMKIIp\_PP1a} = v_{568} - v_{569} - v_{570} \qquad (1417)$$

11.131 Species `CamR_Ca4_ABCD_CaMKIIp_PP1a`

Name CamR_Ca4_ABCD_CaMKIIp_PP1a

Initial concentration $0 \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in three reactions (as a reactant in `reaction_502`, `reaction_503` and as a product in `reaction_501`).

$$\frac{\text{d}}{\text{d}t}\text{CamR\_Ca4\_ABCD\_CaMKIIp\_PP1a} = v_{571} - v_{572} - v_{573} \qquad (1418)$$

11.132 Species `PP2Bi`

Name PP2Bi

Initial concentration $6 \cdot 10^{-6} \, \text{mol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in `Ca_binding_to_PP2Bi` and as a product in `Ca_dissociating_from_PP2Bi_Ca1`).

$$\frac{\text{d}}{\text{d}t}\text{PP2Bi} = v_{586} - v_{579} \qquad (1419)$$

11.133 Species PP2Bi_Ca1

Name PP2Bi_Ca1

Initial concentration $0\,\mathrm{mol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in Ca_binding_to_PP2Bi_Ca1, Ca_dissociating_from_PP2Bi_Ca1 and as a product in Ca_binding_to_PP2Bi, Ca_dissociating_from_PP2Bi_Ca2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{PP2Bi\_Ca1} = v_{579} + v_{583} - v_{580} - v_{586} \tag{1420}$$

11.134 Species PP2Bi_Ca2

Name PP2Bi_Ca2

Initial concentration $0\,\mathrm{mol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in Ca_binding_to_PP2Bi_Ca2, Ca_dissociating_from_PP2Bi_Ca2 and as a product in Ca_binding_to_PP2Bi_Ca1, Ca_dissociating_from_PP2Bi_Ca3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{PP2Bi\_Ca2} = v_{580} + v_{584} - v_{581} - v_{583} \tag{1421}$$

11.135 Species PP2Bi_Ca3

Name PP2Bi_Ca3

Initial concentration $0\,\mathrm{mol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in Ca_binding_to_PP2Bi_Ca3, Ca_dissociating_from_PP2Bi_Ca3 and as a product in Ca_binding_to_PP2Bi_Ca2, Ca_dissociating_from_PP2B).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{PP2Bi\_Ca3} = v_{581} + v_{585} - v_{582} - v_{584} \tag{1422}$$