SBML Model Report

Model name: "Bungay2006_FollicularFluid"

May 6, 2016

1 General Overview

This is a document in SBML Level 2 Version 4 format. This model was created by the following three authors: Nick Juty[1], Michael Schubert[2] and Vijayalakshmi Chelliah[3] at May twelveth 2011 at 12:59 a. m. and last time modified at May 28th 2014 at 1:25 p. m. Table 1 gives an overview of the quantities of all components of this model.

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

Element	Quantity	Element	Quantity
compartment types	0	compartments	1
species types	0	species	54
events	0	constraints	0
reactions	45	function definitions	0
global parameters	75	unit definitions	1
rules	0	initial assignments	0

Model Notes

This model is from the article:
Modelling thrombin generation in human ovarian follicular fluid
Bungay Sharene D., Gentry Patricia A., Gentry Rodney D. Bulletin of Mathematical BiologyVolume 68, Issue 8, 12 July 2006, Pages 2283-302 16838084,
Abstract:

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A mathematical model is constructed to study thrombin production in human ovarian follicular fluid. The model results show that the amount of thrombin that can be produced in ovarian follicular fluid is much lower than that in blood plasma, failing to reach the level required for fibrin formation, and thereby supporting the hypothesis that in follicular fluid thrombin functions to initiate cellular activities via intracellular signalling receptors. It is also concluded that the absence of the amplification pathway to thrombin production in follicular fluid is a major factor in restricting the amount of thrombin that can be produced. Titration of the initial concentrations of the various reactants in the model lead to predictions for the amount of tissue factor and phospholipid that is required to maintain thrombin production in the follicle, as well as to the conclusion that tissue factor pathway inhibitor has little effect on the time that thrombin generation is sustained. Numerical experiments to determine the effect of factor V, which is at a much reduced level in follicular fluid compared to plasma, and thrombomodulin, illustrate the importance for further experimental work to determine values for several parameters that have yet to be reported in the literature.

2 Unit Definitions

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

2.1 Unit `substance`

Name nano mole

Definition nmol

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
`compartment`	Cell		3	1	litre	☑	

3.1 Compartment `compartment`

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

Name Cell

4 Species

This model contains 54 species. Section 7 provides further details and the derived rates of change of each species.

Table 3: Properties of each species.

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
II_f	II_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
II_l	II_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mIIa_f	mIIa_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
mIIa_l	mIIa_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
V_f	V_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
V_l	V_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
Va_f	Va_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
Va_l	Va_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
VII_f	VII_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
VII_l	VII_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
VIIa_f	VIIa_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
VIIa_l	VIIa_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
X_f	X_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
X_l	X_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
Xa_f	Xa_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
Xa_l	Xa_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
APC_f	APC_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
APC_l	APC_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
PS_f	PS_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
PS_l	PS_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
Vai_f	Vai_f	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
Vai_l	Vai_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
PC_f	PC_f	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
PC_l	PC_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TF_l	TF_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TF_VIIa_l	TF_VIIa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TF_VII_l	TF_VII_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TF_VIIa_X_l	TF_VIIa_X_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TF_VIIa_Xa_l	TF_VIIa_Xa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TF_VII_Xa_l	TF_VII_Xa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
Xa_Va_l	Xa_Va_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
V_Xa_l	V_Xa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
IIa_f	IIa_f	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
V_IIa_l	V_IIa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
Xa_Va_II_l	Xa_Va_II_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
Xa_Va_mIIa_l	Xa_Va_mIIa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
APC_PS_l	APC_PS_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TFPI_f	TFPI_f	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
AT_f	AT_f	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
IIa_AT_f	IIa_AT_f	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TFPI_Xa_l	TFPI_Xa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TFPI_Xa_TF_VIIa_l	TFPI_Xa_TF_VIIa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
APC_PS_Va_l	APC_PS_Va_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
Xa_AT_f	Xa_AT_f	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
VII_Xa_l	VII_Xa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
V_mIIa_l	V_mIIa_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
TM_l	TM_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
IIa_TM_l	IIa_TM_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟
IIa_TM_PC_l	IIa_TM_PC_l	compartment	$\mathrm{nmol \cdot l^{-1}}$	⊟	⊟

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
mIIa_AT_l	mIIa_AT_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
LIPID	LIPID	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
alpha2M_l	alpha2M_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
alpha2M_IIa_l	alpha2M_IIa_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟
alpha2M_Xa_l	alpha2M_Xa_l	compartment	$\mathrm{nmol} \cdot \mathrm{l}^{-1}$	⊟	⊟

5 Parameters

This model contains 75 global parameters.

Table 4: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
konII			0.004		☑
nva			100.000		☑
koffII			1.000		☑
konmIIa			0.050		☑
koffmIIa			0.475		☑
konV			0.050		☑
koffV			0.145		☑
konVa			0.057		☑
koffVa			0.170		☑
konVII			0.050		☑
koffVII			0.660		☑
konVIIa			0.050		☑
koffVIIa			0.227		☑
konX			0.010		☑
koffX			1.900		☑
konXa			0.029		☑
koffXa			3.300		☑
konAPC			0.050		☑
koffAPC			3.500		☑
konPS			0.050		☑
koffPS			0.200		☑
konVai			0.057		☑
koffVai			0.170		☑
konPC			0.050		☑
koffPC			11.500		☑
k1			0.500		☑
k2			0.005		☑
k3			0.005		☑
k4			0.005		☑
k8			0.100		☑
k9			32.500		☑
k10			1.500		☑
k11			0.050		☑
k12			44.800		☑
k13			15.200		☑
k16			1.000		☑
k17			1.000		☑

Id	Name	SBO	Value	Unit	Constant
k21			0.100		☑
k22			1.000		☑
k23			0.043		☑
k27			0.100		☑
k28			6.940		☑
k29			0.230		☑
k33			0.100		☑
k34			100.000		☑
k35			0.100		☑
k36			66.000		☑
k37			13.000		☑
k38			15.000		☑
k39			0.050		☑
k40			44.800		☑
k41			15.200		☑
k48			0.100		☑
k49			1.600		☑
k50			0.400		☑
k51			0.016		☑
k52			$3.3 \cdot 10^{-4}$		☑
k53			0.010		☑
k54			0.001		☑
k56			$2.3 \cdot 10^{-6}$		☑
k57			$6.83 \cdot 10^{-6}$		☑
k58			0.100		☑
k59			6.940		☑
k60			1.035		☑
k64			1.000		☑
k65			0.500		☑
k66			0.100		☑
k67			6.400		☑
k68			3.600		☑
k69			$6.83 \cdot 10^{-6}$		☑
k70			0.100		☑
k71			0.500		☑
k75			1.000		☑
k77			$2.5 \cdot 10^{-6}$		☑
k78			$1.4 \cdot 10^{-6}$		☑

6 Reactions

This model contains 45 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	LB1	Factor II lipid binding	II_f + 100 LIPID ⟶ II_l	
2	LB2	Factor mIIa lipid binding	mIIa_f + 100 LIPID ⟶ mIIa_l	
3	LB3	Factor V lipid binding	V_f + 100 LIPID ⟶ V_l	
4	LB4	Factor Va lipid binding	Va_f + 100 LIPID ⟶ Va_l	
5	LB5	Factor VII lipid binding	VII_f + 100 LIPID ⟶ VII_l	
6	LB6	Factor VIIa lipid binding	VIIa_f + 100 LIPID ⟶ VIIa_l	
7	LB11	Factor X lipid binding	X_f + 100 LIPID ⟶ X_l	
8	LB12	Factor Xa lipid binding	Xa_f + 100 LIPID ⟶ Xa_l	
9	LB13	APC lipid binding	APC_f + 100 LIPID ⟶ APC_l	
10	LB14	PS lipid binding	PS_f + 100 LIPID ⟶ PS_l	
11	LB16	Factor Vai lipid binding	Vai_f + 100 LIPID ⟶ Vai_l	
12	LB17	PC lipid binding	PC_f + 100 LIPID ⟶ PC_l	
13	R1	TF_VIIa binding	VIIa_l + TF_l ⟶ TF_VIIa_l	0000177
14	R2	TF_VII binding	VII_l + TF_l ⟶ TF_VII_l	0000177
15	R4	X_TF_VIIa complex formation	X_l + TF_VIIa_l ⟶ TF_VIIa_X_l	0000526
16	R4b	Factor X activation	TF_VIIa_X_l ⟶ TF_VIIa_Xa_l	0000170
17	R4c	Factor Xa release	TF_VIIa_Xa_l ⟶ Xa_l + TF_VIIa_l	0000180
18	R5	Xa_TF_VII binding	Xa_l + TF_VII_l ⟶ TF_VII_Xa_l	0000177
19	R5b	TF_VII activation	TF_VII_Xa_l ⟶ Xa_l + TF_VIIa_l	0000170
20	R7	Va_Xa binding	Va_l + Xa_l ⟶ Xa_Va_l	0000177
21	R9	V_Xa binding	Xa_l + V_l ⟶ V_Xa_l	0000177
22	R9b	Factor V activation	V_Xa_l ⟶ Xa_l + Va_l	0000170
23	R11		IIa_f + V_l ⟶ V_IIa_l	0000177

№	Id	Name	Reaction Equation	SBO
24	R11b		V_IIa_l ⟶ IIa_f + Va_l	0000180
25	R13		II_l + Xa_Va_l ⟶ Xa_Va_II_l	0000177
26	R14		mIIa_l + Xa_Va_l ⟶ Xa_Va_mIIa_l	0000177
27	R15		Xa_Va_II_l ⟶ Xa_Va_mIIa_l	0000170
28	R15b		Xa_Va_mIIa_l ⟶ IIa_f + Xa_Va_l + 100 LIPID	0000180
29	R16		Xa_l + VII_l ⟶ VII_Xa_l	0000177
30	R16b		VII_Xa_l ⟶ Xa_l + VIIa_l	0000180
31	R19		Va_l + APC_PS_l ⟶ APC_PS_Va_l	0000177
32	R19b		APC_PS_Va_l ⟶ Vai_l + APC_PS_l	0000180
33	R20		Xa_f + TFPI_f ⟶ TFPI_Xa_l	0000177
34	R21		TF_VIIa_l + TFPI_Xa_l ⟶ TFPI_Xa_TF_VIIa_l	0000177
35	R23		AT_f + Xa_f ⟶ Xa_AT_f	0000177
36	R24		AT_f + IIa_f ⟶ IIa_AT_f	0000177
37	R25		mIIa_l + V_l ⟶ V_mIIa_l	0000177
38	R25b		V_mIIa_l ⟶ mIIa_l + Va_l	0000180
39	R27		TM_l + IIa_f ⟶ IIa_TM_l	0000177
40	R28		PC_l + IIa_TM_l ⟶ IIa_TM_PC_l	0000177
41	R28b		IIa_TM_PC_l ⟶ APC_l + IIa_TM_l	0000180
42	R29		AT_f + mIIa_f ⟶ mIIa_AT_l	0000177
43	R30		PS_l + APC_l ⟶ APC_PS_l	0000177
44	R33	R33	alpha2M_l + IIa_f ⟶ alpha2M_IIa_l	0000177
45	R34	R34	alpha2M_l + Xa_f ⟶ alpha2M_Xa_l	0000177

6.1 Reaction LB1

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

Name Factor II lipid binding

Reaction equation

$$\mathrm{II\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{II\_l} \tag{1}$$

Reactants

Table 6: Properties of each reactant.

Id	Name	SBO
II_f	II_f	
LIPID	LIPID	

Product

Table 7: Properties of each product.

Id	Name	SBO
II_l	II_l	

Kinetic Law

Derived unit contains undeclared units

$$v_1 = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konII} \cdot [\mathrm{II\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffII} \cdot [\mathrm{II\_l}] \right) \tag{2}$$

6.2 Reaction LB2

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

Name Factor mIIa lipid binding

Reaction equation

$$\mathrm{mIIa\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{mIIa\_l} \tag{3}$$

Reactants

Table 8: Properties of each reactant.

Id	Name	SBO
mIIa_f	mIIa_f	
LIPID	LIPID	

Product

Table 9: Properties of each product.

Id	Name	SBO
mIIa_l	mIIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_2 = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konmIIa} \cdot [\mathrm{mIIa\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffmIIa} \cdot [\mathrm{mIIa\_l}] \right) \tag{4}$$

6.3 Reaction LB3

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

Name Factor V lipid binding

Reaction equation

$$\mathrm{V\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{V\_l} \tag{5}$$

Reactants

Table 10: Properties of each reactant.

Id	Name	SBO
V_f	V_f	
LIPID	LIPID	

Product

Table 11: Properties of each product.

Id	Name	SBO
V_l	V_l	

Kinetic Law

Derived unit contains undeclared units

$$v_3 = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konV} \cdot [\mathrm{V\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffV} \cdot [\mathrm{V\_l}] \right) \tag{6}$$

6.4 Reaction LB4

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

Name Factor Va lipid binding

Reaction equation

$$\mathrm{Va\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{Va\_l} \tag{7}$$

Reactants

Table 12: Properties of each reactant.

Id	Name	SBO
Va_f	Va_f	
LIPID	LIPID	

Product

Table 13: Properties of each product.

Id	Name	SBO
Va_l	Va_l	

Kinetic Law

Derived unit contains undeclared units

$$v_4 = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konVa} \cdot [\mathrm{Va\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffVa} \cdot [\mathrm{Va\_l}] \right) \tag{8}$$

6.5 Reaction LB5

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

Name Factor VII lipid binding

Reaction equation

$$\mathrm{VII\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{VII\_l} \tag{9}$$

Reactants

Table 14: Properties of each reactant.

Id	Name	SBO
VII_f	VII_f	
LIPID	LIPID	

Product

Table 15: Properties of each product.

Id	Name	SBO
VII_l	VII_l	

Kinetic Law

Derived unit contains undeclared units

$$v_5 = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konVII} \cdot [\mathrm{VII\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffVII} \cdot [\mathrm{VII\_l}] \right) \tag{10}$$

6.6 Reaction LB6

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

Name Factor VIIa lipid binding

Reaction equation

$$\mathrm{VIIa\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{VIIa\_l} \tag{11}$$

Reactants

Table 16: Properties of each reactant.

Id	Name	SBO
VIIa_f	VIIa_f	
LIPID	LIPID	

Product

Table 17: Properties of each product.

Id	Name	SBO
VIIa_l	VIIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_6 = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konVIIa} \cdot [\mathrm{VIIa\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffVIIa} \cdot [\mathrm{VIIa\_l}] \right) \tag{12}$$

6.7 Reaction LB11

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

Name Factor X lipid binding

Reaction equation

$$\mathrm{X\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{X\_l} \tag{13}$$

Reactants

Table 18: Properties of each reactant.

Id	Name	SBO
X_f	X_f	
LIPID	LIPID	

Product

Table 19: Properties of each product.

Id	Name	SBO
X_l	X_l	

Kinetic Law

Derived unit contains undeclared units

$$v_7 = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konX} \cdot [\mathrm{X\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffX} \cdot [\mathrm{X\_l}] \right) \tag{14}$$

6.8 Reaction LB12

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

Name Factor Xa lipid binding

Reaction equation

$$\mathrm{Xa\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{Xa\_l} \tag{15}$$

Reactants

Table 20: Properties of each reactant.

Id	Name	SBO
Xa_f	Xa_f	
LIPID	LIPID	

Product

Table 21: Properties of each product.

Id	Name	SBO
Xa_l	Xa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_8 = \frac{\mathrm{konXa} \cdot [\mathrm{Xa\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffXa} \cdot [\mathrm{Xa\_l}] \tag{16}$$

6.9 Reaction LB13

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

Name APC lipid binding

Reaction equation

$$\mathrm{APC\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{APC\_l} \tag{17}$$

Reactants

Table 22: Properties of each reactant.

Id	Name	SBO
APC_f	APC_f	
LIPID	LIPID	

Product

Table 23: Properties of each product.

Id	Name	SBO
APC_l	APC_l	

Kinetic Law

Derived unit contains undeclared units

$$v_9 = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konAPC} \cdot [\mathrm{APC\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffAPC} \cdot [\mathrm{APC\_l}] \right) \tag{18}$$

6.10 Reaction LB14

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

Name PS lipid binding

Reaction equation

$$\mathrm{PS\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{PS\_l} \tag{19}$$

Reactants

Table 24: Properties of each reactant.

Id	Name	SBO
PS_f	PS_f	
LIPID	LIPID	

Product

Table 25: Properties of each product.

Id	Name	SBO
PS_l	PS_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{10} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konPS} \cdot [\mathrm{PS\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffPS} \cdot [\mathrm{PS\_l}] \right) \tag{20}$$

6.11 Reaction LB16

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

Name Factor Vai lipid binding

Reaction equation

$$\mathrm{Vai\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{Vai\_l} \tag{21}$$

Reactants

Table 26: Properties of each reactant.

Id	Name	SBO
Vai_f	Vai_f	
LIPID	LIPID	

Product

Table 27: Properties of each product.

Id	Name	SBO
Vai_l	Vai_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{11} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konVai} \cdot [\mathrm{Vai\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffVai} \cdot [\mathrm{Vai\_l}] \right) \tag{22}$$

6.12 Reaction LB17

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

Name PC lipid binding

Reaction equation

$$\mathrm{PC\_f} + 100\,\mathrm{LIPID} \longrightarrow \mathrm{PC\_l} \tag{23}$$

Reactants

Table 28: Properties of each reactant.

Id	Name	SBO
PC_f	PC_f	
LIPID	LIPID	

Product

Table 29: Properties of each product.

Id	Name	SBO
PC_l	PC_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{12} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \left(\frac{\mathrm{konPC} \cdot [\mathrm{PC\_f}] \cdot [\mathrm{LIPID}]}{\mathrm{nva}} - \mathrm{koffPC} \cdot [\mathrm{PC\_l}] \right) \tag{24}$$

6.13 Reaction R1

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

Name TF_VIIa binding

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{VIIa\_l} + \mathrm{TF\_l} \longrightarrow \mathrm{TF\_VIIa\_l} \tag{25}$$

Reactants

Table 30: Properties of each reactant.

Id	Name	SBO
VIIa_l	VIIa_l	
TF_l	TF_l	

Product

Table 31: Properties of each product.

Id	Name	SBO
TF_VIIa_l	TF_VIIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{13} = \mathrm{vol}(\mathrm{compartment}) \cdot (\mathrm{k1} \cdot [\mathrm{TF\_l}] \cdot [\mathrm{VIIa\_l}] - \mathrm{k2} \cdot [\mathrm{TF\_VIIa\_l}]) \tag{26}$$

6.14 Reaction R2

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

Name TF_VII binding

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{VII\_l} + \mathrm{TF\_l} \longrightarrow \mathrm{TF\_VII\_l} \tag{27}$$

Reactants

Table 32: Properties of each reactant.

Id	Name	SBO
VII_1	VII_1	
TF_1	TF_1	

Product

Table 33: Properties of each product.

Id	Name	SBO
TF_VII_1	TF_VII_1	

Kinetic Law

Derived unit contains undeclared units

$$v_{14} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k3} \cdot [\mathrm{TF\_1}] \cdot [\mathrm{VII\_1}] - \mathrm{k4} \cdot [\mathrm{TF\_VII\_1}]) \tag{28}$$

6.15 Reaction R4

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

Name X_TF_VIIa complex formation

SBO:0000526 protein complex formation

Reaction equation

$$\mathrm{X\_1} + \mathrm{TF\_VIIa\_1} \longrightarrow \mathrm{TF\_VIIa\_X\_1} \tag{29}$$

Reactants

Table 34: Properties of each reactant.

Id	Name	SBO
X_1	X_1	
TF_VIIa_1	TF_VIIa_1	

Product

Table 35: Properties of each product.

Id	Name	SBO
TF_VIIa_X_l	TF_VIIa_X_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{15} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k8} \cdot [\mathrm{TF\_VIIa\_l}] \cdot [\mathrm{X\_l}] - \mathrm{k9} \cdot [\mathrm{TF\_VIIa\_X\_l}]) \tag{30}$$

6.16 Reaction R4b

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

Name Factor X activation

SBO:0000170 stimulation

Reaction equation

$$\mathrm{TF\_VIIa\_X\_l} \longrightarrow \mathrm{TF\_VIIa\_Xa\_l} \tag{31}$$

Reactant

Table 36: Properties of each reactant.

Id	Name	SBO
TF_VIIa_X_l	TF_VIIa_X_l	

Product

Table 37: Properties of each product.

Id	Name	SBO
TF_VIIa_Xa_l	TF_VIIa_Xa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{16} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k10} \cdot [\mathrm{TF\_VIIa\_X\_l}] \tag{32}$$

6.17 Reaction R4c

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

Name Factor Xa release

SBO:0000180 dissociation

Reaction equation

$$\text{TF\_VIIa\_Xa\_l} \longrightarrow \text{Xa\_l} + \text{TF\_VIIa\_l} \tag{33}$$

Reactant

Table 38: Properties of each reactant.

Id	Name	SBO
TF_VIIa_Xa_l	TF_VIIa_Xa_l	

Products

Table 39: Properties of each product.

Id	Name	SBO
Xa_l	Xa_l	
TF_VIIa_l	TF_VIIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{17} = \text{vol}\,(\text{compartment}) \cdot \text{k75} \cdot [\text{TF\_VIIa\_Xa\_l}] \tag{34}$$

6.18 Reaction R5

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

Name Xa_TF_VII binding

SBO:0000177 non-covalent binding

Reaction equation

$$\text{Xa\_l} + \text{TF\_VII\_l} \longrightarrow \text{TF\_VII\_Xa\_l} \tag{35}$$

Reactants

Table 40: Properties of each reactant.

Id	Name	SBO
Xa_l	Xa_l	
TF_VII_l	TF_VII_l	

Product

Table 41: Properties of each product.

Id	Name	SBO
TF_VII_Xa_l	TF_VII_Xa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{18} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k11} \cdot [\mathrm{TF\_VII\_l}] \cdot [\mathrm{Xa\_l}] - \mathrm{k12} \cdot [\mathrm{TF\_VII\_Xa\_l}]) \tag{36}$$

6.19 Reaction R5b

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

Name TF_VII activation

SBO:0000170 stimulation

Reaction equation

$$\mathrm{TF\_VII\_Xa\_l} \longrightarrow \mathrm{Xa\_l} + \mathrm{TF\_VIIa\_l} \tag{37}$$

Reactant

Table 42: Properties of each reactant.

Id	Name	SBO
TF_VII_Xa_l	TF_VII_Xa_l	

Products

Table 43: Properties of each product.

Id	Name	SBO
Xa_l	Xa_l	
TF_VIIa_l	TF_VIIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{19} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k13} \cdot [\mathrm{TF\_VII\_Xa\_l}] \tag{38}$$

6.20 Reaction R7

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

Name Va_Xa binding

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{Va\_l} + \mathrm{Xa\_l} \longrightarrow \mathrm{Xa\_Va\_l} \tag{39}$$

Reactants

Table 44: Properties of each reactant.

Id	Name	SBO
Va_l	Va_l	
Xa_l	Xa_l	

Product

Table 45: Properties of each product.

Id	Name	SBO
Xa_Va_l	Xa_Va_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{20} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k16} \cdot [\mathrm{Xa\_l}] \cdot [\mathrm{Va\_l}] - \mathrm{k17} \cdot [\mathrm{Xa\_Va\_l}]) \tag{40}$$

6.21 Reaction R9

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

Name V_Xa binding

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{Xa\_l} + \mathrm{V\_l} \longrightarrow \mathrm{V\_Xa\_l} \tag{41}$$

Reactants

Table 46: Properties of each reactant.

Id	Name	SBO
Xa_l	Xa_l	
V_l	V_l	

Product

Table 47: Properties of each product.

Id	Name	SBO
V_Xa_l	V_Xa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{21} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k21} \cdot [\mathrm{V\_l}] \cdot [\mathrm{Xa\_l}] - \mathrm{k22} \cdot [\mathrm{V\_Xa\_l}]) \tag{42}$$

6.22 Reaction R9b

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

Name Factor V activation

SBO:0000170 stimulation

Reaction equation

$$\mathrm{V\_Xa\_l} \longrightarrow \mathrm{Xa\_l} + \mathrm{Va\_l} \tag{43}$$

Reactant

Table 48: Properties of each reactant.

Id	Name	SBO
V_Xa_l	V_Xa_l	

Products

Table 49: Properties of each product.

Id	Name	SBO
Xa_l	Xa_l	
Va_l	Va_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{22} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k23} \cdot [\mathrm{V\_Xa\_l}] \tag{44}$$

6.23 Reaction R11

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{IIa\_f} + \mathrm{V\_l} \longrightarrow \mathrm{V\_IIa\_l} \tag{45}$$

Reactants

Table 50: Properties of each reactant.

Id	Name	SBO
IIa_f	IIa_f	
V_l	V_l	

Product

Table 51: Properties of each product.

Id	Name	SBO
V_IIa_l	V_IIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{23} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k27} \cdot [\mathrm{V\_l}] \cdot [\mathrm{IIa\_f}] - \mathrm{k28} \cdot [\mathrm{V\_IIa\_l}]) \tag{46}$$

6.24 Reaction R11b

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

SBO:0000180 dissociation

Reaction equation

$$\mathrm{V\_IIa\_l} \longrightarrow \mathrm{IIa\_f} + \mathrm{Va\_l} \tag{47}$$

Reactant

Table 52: Properties of each reactant.

Id	Name	SBO
V_IIa_l	V_IIa_l	

Products

Table 53: Properties of each product.

Id	Name	SBO
IIa_f	IIa_f	
Va_l	Va_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{24} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k29} \cdot [\mathrm{V\_IIa\_l}] \tag{48}$$

6.25 Reaction R13

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

SBO:0000177 non-covalent binding

Reaction equation

$$\text{II\_l} + \text{Xa\_Va\_l} \longrightarrow \text{Xa\_Va\_II\_l} \tag{49}$$

Reactants

Table 54: Properties of each reactant.

Id	Name	SBO
II_l	II_l	
Xa_Va_l	Xa_Va_l	

Product

Table 55: Properties of each product.

Id	Name	SBO
Xa_Va_II_l	Xa_Va_II_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{25} = \text{vol}\,(\text{compartment}) \cdot (\text{k33} \cdot [\text{Xa\_Va\_l}] \cdot [\text{II\_l}] - \text{k34} \cdot [\text{Xa\_Va\_II\_l}]) \tag{50}$$

6.26 Reaction R14

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

SBO:0000177 non-covalent binding

Reaction equation

$$\text{mIIa\_l} + \text{Xa\_Va\_l} \longrightarrow \text{Xa\_Va\_mIIa\_l} \tag{51}$$

Reactants

Table 56: Properties of each reactant.

Id	Name	SBO
mIIa_l	mIIa_l	
Xa_Va_l	Xa_Va_l	

Product

Table 57: Properties of each product.

Id	Name	SBO
Xa_Va_mIIa_l	Xa_Va_mIIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{26} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k35} \cdot [\mathrm{Xa\_Va\_l}] \cdot [\mathrm{mIIa\_l}] - \mathrm{k36} \cdot [\mathrm{Xa\_Va\_mIIa\_l}]) \tag{52}$$

6.27 Reaction R15

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

SBO:0000170 stimulation

Reaction equation

$$\mathrm{Xa\_Va\_II\_l} \longrightarrow \mathrm{Xa\_Va\_mIIa\_l} \tag{53}$$

Reactant

Table 58: Properties of each reactant.

Id	Name	SBO
Xa_Va_II_l	Xa_Va_II_l	

Product

Table 59: Properties of each product.

Id	Name	SBO
Xa_Va_mIIa_l	Xa_Va_mIIa_l	

Id	Name	SBO

Kinetic Law

Derived unit contains undeclared units

$$v_{27} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k37} \cdot [\mathrm{Xa\_Va\_II\_l}] \tag{54}$$

6.28 Reaction R15b

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

SBO:0000180 dissociation

Reaction equation

$$\mathrm{Xa\_Va\_mIIa\_l} \longrightarrow \mathrm{IIa\_f} + \mathrm{Xa\_Va\_l} + 100\,\mathrm{LIPID} \tag{55}$$

Reactant

Table 60: Properties of each reactant.

Id	Name	SBO
Xa_Va_mIIa_l	Xa_Va_mIIa_l	

Products

Table 61: Properties of each product.

Id	Name	SBO
IIa_f	IIa_f	
Xa_Va_l	Xa_Va_l	
LIPID	LIPID	

Kinetic Law

Derived unit contains undeclared units

$$v_{28} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k38} \cdot [\mathrm{Xa\_Va\_mIIa\_l}] \tag{56}$$

6.29 Reaction R16

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

SBO:0000177 non-covalent binding

Reaction equation

$$\text{Xa\_l} + \text{VII\_l} \longrightarrow \text{VII\_Xa\_l} \tag{57}$$

Reactants

Table 62: Properties of each reactant.

Id	Name	SBO
Xa_l	Xa_l	
VII_l	VII_l	

Product

Table 63: Properties of each product.

Id	Name	SBO
VII_Xa_l	VII_Xa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{29} = \text{vol}\,(\text{compartment}) \cdot (\text{k39} \cdot [\text{VII\_l}] \cdot [\text{Xa\_l}] - \text{k40} \cdot [\text{VII\_Xa\_l}]) \tag{58}$$

6.30 Reaction R16b

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

SBO:0000180 dissociation

Reaction equation

$$\text{VII\_Xa\_l} \longrightarrow \text{Xa\_l} + \text{VIIa\_l} \tag{59}$$

Reactant

Table 64: Properties of each reactant.

Id	Name	SBO
VII_Xa_l	VII_Xa_l	

Products

Table 65: Properties of each product.

Id	Name	SBO
Xa_1	Xa_1	
VIIa_1	VIIa_1	

Kinetic Law

Derived unit contains undeclared units

$$v_{30} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k41} \cdot [\mathrm{VII\_Xa\_1}] \tag{60}$$

6.31 Reaction R19

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{Va\_1} + \mathrm{APC\_PS\_1} \longrightarrow \mathrm{APC\_PS\_Va\_1} \tag{61}$$

Reactants

Table 66: Properties of each reactant.

Id	Name	SBO
Va_1	Va_1	
APC_PS_1	APC_PS_1	

Product

Table 67: Properties of each product.

Id	Name	SBO
APC_PS_Va_1	APC_PS_Va_1	

Kinetic Law

Derived unit contains undeclared units

$$v_{31} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k48} \cdot [\mathrm{APC\_PS\_1}] \cdot [\mathrm{Va\_1}] - \mathrm{k49} \cdot [\mathrm{APC\_PS\_Va\_1}]) \tag{62}$$

6.32 Reaction R19b

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

SBO:0000180 dissociation

Reaction equation

$$\mathrm{APC\_PS\_Va\_1} \longrightarrow \mathrm{Vai\_1} + \mathrm{APC\_PS\_1} \tag{63}$$

Reactant

Table 68: Properties of each reactant.

Id	Name	SBO
APC_PS_Va_1	APC_PS_Va_1	

Products

Table 69: Properties of each product.

Id	Name	SBO
Vai_1	Vai_1	
APC_PS_1	APC_PS_1	

Kinetic Law

Derived unit contains undeclared units

$$v_{32} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k50} \cdot [\mathrm{APC\_PS\_Va\_1}] \tag{64}$$

6.33 Reaction R20

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{Xa\_f} + \mathrm{TFPI\_f} \longrightarrow \mathrm{TFPI\_Xa\_1} \tag{65}$$

Reactants

Table 70: Properties of each reactant.

Id	Name	SBO
Xa_f	Xa_f	
TFPI_f	TFPI_f	

Product

Table 71: Properties of each product.

Id	Name	SBO
TFPI_Xa_l	TFPI_Xa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{33} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k51} \cdot [\mathrm{TFPI\_f}] \cdot [\mathrm{Xa\_f}] - \mathrm{k52} \cdot [\mathrm{TFPI\_Xa\_l}]) \tag{66}$$

6.34 Reaction R21

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{TF\_VIIa\_l} + \mathrm{TFPI\_Xa\_l} \longrightarrow \mathrm{TFPI\_Xa\_TF\_VIIa\_l} \tag{67}$$

Reactants

Table 72: Properties of each reactant.

Id	Name	SBO
TF_VIIa_l	TF_VIIa_l	
TFPI_Xa_l	TFPI_Xa_l	

Product

Table 73: Properties of each product.

Id	Name	SBO
TFPI_Xa_TF_VIIa_l	TFPI_Xa_TF_VIIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{34} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k53} \cdot [\mathrm{TFPI\_Xa\_l}] \cdot [\mathrm{TF\_VIIa\_l}] - \mathrm{k54} \cdot [\mathrm{TFPI\_Xa\_TF\_VIIa\_l}]) \quad (68)$$

6.35 Reaction R23

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{AT\_f} + \mathrm{Xa\_f} \longrightarrow \mathrm{Xa\_AT\_f} \quad (69)$$

Reactants

Table 74: Properties of each reactant.

Id	Name	SBO
AT_f	AT_f	
Xa_f	Xa_f	

Product

Table 75: Properties of each product.

Id	Name	SBO
Xa_AT_f	Xa_AT_f	

Kinetic Law

Derived unit contains undeclared units

$$v_{35} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k56} \cdot [\mathrm{Xa\_f}] \cdot [\mathrm{AT\_f}] \quad (70)$$

6.36 Reaction R24

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{AT\_f} + \mathrm{IIa\_f} \longrightarrow \mathrm{IIa\_AT\_f} \tag{71}$$

Reactants

Table 76: Properties of each reactant.

Id	Name	SBO
AT_f	AT_f	
IIa_f	IIa_f	

Product

Table 77: Properties of each product.

Id	Name	SBO
IIa_AT_f	IIa_AT_f	

Kinetic Law

Derived unit contains undeclared units

$$v_{36} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k57} \cdot [\mathrm{IIa\_f}] \cdot [\mathrm{AT\_f}] \tag{72}$$

6.37 Reaction R25

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{mIIa\_l} + \mathrm{V\_l} \longrightarrow \mathrm{V\_mIIa\_l} \tag{73}$$

Reactants

Table 78: Properties of each reactant.

Id	Name	SBO
mIIa_l	mIIa_l	
V_l	V_l	

Product

Table 79: Properties of each product.

Id	Name	SBO
V_mIIa_l	V_mIIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{37} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k58} \cdot [\mathrm{V\_l}] \cdot [\mathrm{mIIa\_l}] - \mathrm{k59} \cdot [\mathrm{V\_mIIa\_l}]) \tag{74}$$

6.38 Reaction R25b

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

SBO:0000180 dissociation

Reaction equation

$$\mathrm{V\_mIIa\_l} \longrightarrow \mathrm{mIIa\_l} + \mathrm{Va\_l} \tag{75}$$

Reactant

Table 80: Properties of each reactant.

Id	Name	SBO
V_mIIa_l	V_mIIa_l	

Products

Table 81: Properties of each product.

Id	Name	SBO
mIIa_l	mIIa_l	

Id	Name	SBO
Va_l	Va_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{38} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k60} \cdot [\mathrm{V\_mIIa\_l}] \tag{76}$$

6.39 Reaction R27

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{TM\_l} + \mathrm{IIa\_f} \longrightarrow \mathrm{IIa\_TM\_l} \tag{77}$$

Reactants

Table 82: Properties of each reactant.

Id	Name	SBO
TM_l	TM_l	
IIa_f	IIa_f	

Product

Table 83: Properties of each product.

Id	Name	SBO
IIa_TM_l	IIa_TM_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{39} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k64} \cdot [\mathrm{IIa\_f}] \cdot [\mathrm{TM\_l}] - \mathrm{k65} \cdot [\mathrm{IIa\_TM\_l}]) \tag{78}$$

6.40 Reaction R28

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{PC\_1} + \mathrm{IIa\_TM\_1} \longrightarrow \mathrm{IIa\_TM\_PC\_1} \tag{79}$$

Reactants

Table 84: Properties of each reactant.

Id	Name	SBO
PC_1	PC_1	
IIa_TM_1	IIa_TM_1	

Product

Table 85: Properties of each product.

Id	Name	SBO
IIa_TM_PC_1	IIa_TM_PC_1	

Kinetic Law

Derived unit contains undeclared units

$$v_{40} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k66} \cdot [\mathrm{IIa\_TM\_1}] \cdot [\mathrm{PC\_1}] - \mathrm{k67} \cdot [\mathrm{IIa\_TM\_PC\_1}]) \tag{80}$$

6.41 Reaction R28b

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

SBO:0000180 dissociation

Reaction equation

$$\mathrm{IIa\_TM\_PC\_1} \longrightarrow \mathrm{APC\_1} + \mathrm{IIa\_TM\_1} \tag{81}$$

Reactant

Table 86: Properties of each reactant.

Id	Name	SBO
IIa_TM_PC_1	IIa_TM_PC_1	

Products

Table 87: Properties of each product.

Id	Name	SBO
APC_1	APC_1	
IIa_TM_1	IIa_TM_1	

Kinetic Law

Derived unit contains undeclared units

$$v_{41} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k68} \cdot [\mathrm{IIa\_TM\_PC\_1}] \tag{82}$$

6.42 Reaction R29

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{AT\_f} + \mathrm{mIIa\_f} \longrightarrow \mathrm{mIIa\_AT\_1} \tag{83}$$

Reactants

Table 88: Properties of each reactant.

Id	Name	SBO
AT_f	AT_f	
mIIa_f	mIIa_f	

Product

Table 89: Properties of each product.

Id	Name	SBO
mIIa_AT_1	mIIa_AT_1	

Kinetic Law

Derived unit contains undeclared units

$$v_{42} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k69} \cdot [\mathrm{mIIa\_f}] \cdot [\mathrm{AT\_f}] \tag{84}$$

6.43 Reaction R30

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

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{PS\_1} + \mathrm{APC\_1} \longrightarrow \mathrm{APC\_PS\_1} \tag{85}$$

Reactants

Table 90: Properties of each reactant.

Id	Name	SBO
PS_1	PS_1	
APC_1	APC_1	

Product

Table 91: Properties of each product.

Id	Name	SBO
APC_PS_1	APC_PS_1	

Kinetic Law

Derived unit contains undeclared units

$$v_{43} = \mathrm{vol}\,(\mathrm{compartment}) \cdot (\mathrm{k70} \cdot [\mathrm{APC\_1}] \cdot [\mathrm{PS\_1}] - \mathrm{k71} \cdot [\mathrm{APC\_PS\_1}]) \tag{86}$$

6.44 Reaction R33

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

Name R33

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{alpha2M\_1} + \mathrm{IIa\_f} \longrightarrow \mathrm{alpha2M\_IIa\_1} \tag{87}$$

Reactants

Table 92: Properties of each reactant.

Id	Name	SBO
alpha2M_l	alpha2M_l	
IIa_f	IIa_f	

Product

Table 93: Properties of each product.

Id	Name	SBO
alpha2M_IIa_l	alpha2M_IIa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{44} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k77} \cdot [\mathrm{alpha2M\_l}] \cdot [\mathrm{IIa\_f}] \tag{88}$$

6.45 Reaction R34

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

Name R34

SBO:0000177 non-covalent binding

Reaction equation

$$\mathrm{alpha2M\_l} + \mathrm{Xa\_f} \longrightarrow \mathrm{alpha2M\_Xa\_l} \tag{89}$$

Reactants

Table 94: Properties of each reactant.

Id	Name	SBO
alpha2M_l	alpha2M_l	
Xa_f	Xa_f	

Product

Table 95: Properties of each product.

Id	Name	SBO
alpha2M_Xa_l	alpha2M_Xa_l	

Kinetic Law

Derived unit contains undeclared units

$$v_{45} = \mathrm{vol}\,(\mathrm{compartment}) \cdot \mathrm{k78} \cdot [\mathrm{alpha2M\_l}] \cdot [\mathrm{Xa\_f}] \tag{90}$$

7 Derived Rate Equations

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

Identifiers for kinetic laws highlighted in gray cannot be verified to evaluate to units of SBML `substance` per `time`. As a result, some SBML interpreters may not be able to verify the consistency of the units on quantities in the model. Please check if

- parameters without an unit definition are involved or
- volume correction is necessary because the `hasOnlySubstanceUnits` flag may be set to `false` and `spacialDimensions`> 0 for certain species.

7.1 Species II_f

Name II_f

Initial concentration $1174.5\ \mathrm{nmol} \cdot \mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB1).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{II\_f} = -\,v_1 \tag{91}$$

7.2 Species II_l

Name II_l

Initial concentration $0\ \mathrm{nmol} \cdot \mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R13 and as a product in LB1).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{II\_l} = v_1 - v_{25} \tag{92}$$

7.3 Species mIIa_f

Name mIIa_f

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in LB2, R29).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mIIa\_f} = -v_2 - v_{42} \tag{93}$$

7.4 Species mIIa_l

Name mIIa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in R14, R25 and as a product in LB2, R25b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mIIa\_l} = v_2 + v_{38} - v_{26} - v_{37} \tag{94}$$

7.5 Species V_f

Name V_f

Initial concentration $1.75\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{V\_f} = -v_3 \tag{95}$$

7.6 Species V_l

Name V_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in R9, R11, R25 and as a product in LB3).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{V\_l} = v_3 - v_{21} - v_{23} - v_{37} \tag{96}$$

7.7 Species Va_f

Name Va_f

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Va\_f} = -v_4 \tag{97}$$

7.8 Species Va_l

Name Va_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in six reactions (as a reactant in R7, R19 and as a product in LB4, R9b, R11b, R25b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Va\_l} = v_4 + v_{22} + v_{24} + v_{38} - v_{20} - v_{31} \tag{98}$$

7.9 Species VII_f

Name VII_f

Initial concentration $7.6\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB5).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{VII\_f} = -v_5 \tag{99}$$

7.10 Species VII_l

Name VII_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in R2, R16 and as a product in LB5).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{VII\_l} = v_5 - v_{14} - v_{29} \tag{100}$$

7.11 Species VIIa_f

Name VIIa_f

Initial concentration $0.1\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{VIIa\_f} = -v_6 \tag{101}$$

7.12 Species VIIa_l

Name VIIa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in R1 and as a product in LB6, R16b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{VIIa\_l} = v_6 + v_{30} - v_{13} \tag{102}$$

7.13 Species X_f

Name X_f

Initial concentration $142.85\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB11).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{X\_f} = -v_7 \tag{103}$$

7.14 Species X_l

Name X_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R4 and as a product in LB11).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{X\_l} = v_7 - v_{15} \tag{104}$$

7.15 Species Xa_f

Name Xa_f

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in LB12, R20, R23, R34).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Xa\_f} = -v_8 - v_{33} - v_{35} - v_{45} \tag{105}$$

7.16 Species Xa_l

Name Xa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in nine reactions (as a reactant in R5, R7, R9, R16 and as a product in LB12, R4c, R5b, R9b, R16b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Xa\_l} = v_8 + v_{17} + v_{19} + v_{22} + v_{30} - v_{18} - v_{20} - v_{21} - v_{29} \tag{106}$$

7.17 Species APC_f

Name APC_f

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB13).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{APC\_f} = -v_9 \tag{107}$$

7.18 Species APC_l

Name APC_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in R30 and as a product in LB13, R28b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{APC\_l} = v_9 + v_{41} - v_{43} \tag{108}$$

7.19 Species PS_f

Name PS_f

Initial concentration $116\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB14).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{PS\_f} = -v_{10} \tag{109}$$

7.20 Species PS_l

Name PS_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R30 and as a product in LB14).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{PS\_l} = v_{10} - v_{43} \tag{110}$$

7.21 Species Vai_f

Name Vai_f

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in LB16).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Vai\_f} = -v_{11} \tag{111}$$

7.22 Species Vai_l

Name Vai_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a product in LB16, R19b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Vai\_l} = v_{11} + v_{32} \tag{112}$$

7.23 Species PC_f

Name PC_f

Initial concentration $66\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in one reaction (as a reactant in LB17).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{PC\_f} = -v_{12} \tag{113}$$

7.24 Species PC_l

Name PC_l

Initial concentration $0\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in two reactions (as a reactant in R28 and as a product in LB17).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{PC\_l} = v_{12} - v_{40} \tag{114}$$

7.25 Species TF_l

Name TF_l

Initial concentration $0.0182\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in two reactions (as a reactant in R1, R2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TF\_l} = -v_{13} - v_{14} \tag{115}$$

7.26 Species TF_VIIa_l

Name TF_VIIa_l

Initial concentration $0\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in five reactions (as a reactant in R4, R21 and as a product in R1, R4c, R5b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TF\_VIIa\_l} = v_{13} + v_{17} + v_{19} - v_{15} - v_{34} \tag{116}$$

7.27 Species TF_VII_l

Name TF_VII_l

Initial concentration $0\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in two reactions (as a reactant in R5 and as a product in R2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TF\_VII\_l} = v_{14} - v_{18} \tag{117}$$

7.28 Species TF_VIIa_X_l

Name TF_VIIa_X_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R4b and as a product in R4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TF\_VIIa\_X\_l} = v_{15} - v_{16} \tag{118}$$

7.29 Species TF_VIIa_Xa_l

Name TF_VIIa_Xa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R4c and as a product in R4b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TF\_VIIa\_Xa\_l} = v_{16} - v_{17} \tag{119}$$

7.30 Species TF_VII_Xa_l

Name TF_VII_Xa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R5b and as a product in R5).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TF\_VII\_Xa\_l} = v_{18} - v_{19} \tag{120}$$

7.31 Species Xa_Va_l

Name Xa_Va_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in four reactions (as a reactant in R13, R14 and as a product in R7, R15b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Xa\_Va\_l} = v_{20} + v_{28} - v_{25} - v_{26} \tag{121}$$

7.32 Species V_Xa_l

Name V_Xa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R9b and as a product in R9).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{V\_Xa\_l} = v_{21} - v_{22} \tag{122}$$

7.33 Species IIa_f

Name IIa_f

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in six reactions (as a reactant in R11, R24, R27, R33 and as a product in R11b, R15b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{IIa\_f} = v_{24} + v_{28} - v_{23} - v_{36} - v_{39} - v_{44} \tag{123}$$

7.34 Species V_IIa_l

Name V_IIa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R11b and as a product in R11).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{V\_IIa\_l} = v_{23} - v_{24} \tag{124}$$

7.35 Species Xa_Va_II_l

Name Xa_Va_II_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R15 and as a product in R13).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Xa\_Va\_II\_l} = v_{25} - v_{27} \tag{125}$$

7.36 Species Xa_Va_mIIa_l

Name Xa_Va_mIIa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in R15b and as a product in R14, R15).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Xa\_Va\_mIIa\_l} = v_{26} + v_{27} - v_{28} \tag{126}$$

7.37 Species APC_PS_l

Name APC_PS_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in R19 and as a product in R19b, R30).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{APC\_PS\_l} = v_{32} + v_{43} - v_{31} \tag{127}$$

7.38 Species TFPI_f

Name TFPI_f

Initial concentration $12.3\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a reactant in R20).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TFPI\_f} = -\,v_{33} \tag{128}$$

7.39 Species AT_f

Name AT_f

Initial concentration $4721\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in three reactions (as a reactant in R23, R24, R29).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{AT\_f} = -\,v_{35} - v_{36} - v_{42} \tag{129}$$

7.40 Species IIa_AT_f

Name IIa_AT_f

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a product in R24).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{IIa\_AT\_f} = v_{36} \tag{130}$$

7.41 Species TFPI_Xa_l

Name TFPI_Xa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R21 and as a product in R20).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TFPI\_Xa\_l} = v_{33} - v_{34} \tag{131}$$

7.42 Species TFPI_Xa_TF_VIIa_l

Name TFPI_Xa_TF_VIIa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a product in R21).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TFPI\_Xa\_TF\_VIIa\_l} = v_{34} \tag{132}$$

7.43 Species APC_PS_Va_l

Name APC_PS_Va_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R19b and as a product in R19).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{APC\_PS\_Va\_l} = v_{31} - v_{32} \tag{133}$$

7.44 Species Xa_AT_f

Name Xa_AT_f

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in one reaction (as a product in R23).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{Xa\_AT\_f} = v_{35} \tag{134}$$

7.45 Species VII_Xa_l

Name VII_Xa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R16b and as a product in R16).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{VII\_Xa\_l} = v_{29} - v_{30} \tag{135}$$

7.46 Species V_mIIa_l

Name V_mIIa_l

Initial concentration $0\ \mathrm{nmol}\cdot\mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R25b and as a product in R25).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{V\_mIIa\_l} = v_{37} - v_{38} \tag{136}$$

7.47 Species TM_l

Name TM_l

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

This species takes part in one reaction (as a reactant in R27).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{TM\_l} = -v_{39} \tag{137}$$

7.48 Species IIa_TM_l

Name IIa_TM_l

Initial concentration $0\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in three reactions (as a reactant in R28 and as a product in R27, R28b).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{IIa\_TM\_l} = v_{39} + v_{41} - v_{40} \tag{138}$$

7.49 Species IIa_TM_PC_l

Name IIa_TM_PC_l

Initial concentration $0\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in two reactions (as a reactant in R28b and as a product in R28).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{IIa\_TM\_PC\_l} = v_{40} - v_{41} \tag{139}$$

7.50 Species mIIa_AT_l

Name mIIa_AT_l

Initial concentration $0\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in one reaction (as a product in R29).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{mIIa\_AT\_l} = v_{42} \tag{140}$$

7.51 Species LIPID

Name LIPID

Initial concentration $170000\ \mathrm{nmol \cdot l^{-1}}$

This species takes part in 13 reactions (as a reactant in LB1, LB2, LB3, LB4, LB5, LB6, LB11, LB12, LB13, LB14, LB16, LB17 and as a product in R15b).

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{LIPID} = {} & 100\, v_{28} - 100\, v_1 - 100\, v_2 - 100\, v_3 - 100\, v_4 - 100\, v_5 - 100\, v_6 \\ & - 100\, v_7 - 100\, v_8 - 100\, v_9 - 100\, v_{10} - 100\, v_{11} - 100\, v_{12}\end{aligned} \tag{141}$$

7.52 Species alpha2M_l

Name alpha2M_l

Initial concentration $364\ \mathrm{nmol} \cdot \mathrm{l}^{-1}$

This species takes part in two reactions (as a reactant in R33, R34).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{alpha2M\_l} = -v_{44} - v_{45} \tag{142}$$

7.53 Species alpha2M_IIa_l

Name alpha2M_IIa_l

Initial concentration $0\ \mathrm{nmol} \cdot \mathrm{l}^{-1}$

This species takes part in one reaction (as a product in R33).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{alpha2M\_IIa\_l} = v_{44} \tag{143}$$

7.54 Species alpha2M_Xa_l

Name alpha2M_Xa_l

Initial concentration $0\ \mathrm{nmol} \cdot \mathrm{l}^{-1}$

This species takes part in one reaction (as a product in R34).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{alpha2M\_Xa\_l} = v_{45} \tag{144}$$

A Glossary of Systems Biology Ontology Terms

SBO:0000170 stimulation: Positive modulation of the execution of a process

SBO:0000177 non-covalent binding: Interaction between several biochemical entities that results in the formation of a non-covalent comple

SBO:0000180 dissociation: Transformation of a non-covalent complex that results in the formation of several independent biochemical entitie

SBO:0000526 protein complex formation: The process by which two or more proteins interact non-covalently to form a protein complex (SBO:0000297)

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