#	Reaction	Value	Unit	Description	Source of parameter value		
TLR module							
TLR3							
1	=> TLR3	1.0E-04	μM^{-1} min^{-1}	Protein Synth.	Fit		
2	TLR3 =>	5.8E-03	min^{-1}	Protein Deg.	Fit		
3	PIC + TLR3 => TLR3PIC	6.0E-01	μM^{-1} min^{-1}	Asscociation	Fit		
4	TLR3PIC => PIC + TLR3	1.1E-01	min^{-1}	Dissociation	Fit		
5	TRIF => TRIF* ; TLR3PIC	0.39	$\mu M^{-1} min^{-1}$	Triff activation by receptor complex in the early endosome	Fit		
TLR4							
6	LPS => LPSpm	1.7E-01	min^{-1}	LPS bind to the plamsa membrane	Fit		
7	LPSpm => LPSen	1.8E-01	min^{-1}	LPS translocate from plamsa membrane to early endosome	Fit		
8	LPSen => LPS	2.6E-01	min^{-1}	Export LPS	Fit		
9	LPSen =>	1.3E+01	min^{-1}	Depletion of LPS from the early endosome	Fit		
10	LPSpm + TLR4pm => TLP4LPSpm	0.19	$\mu M^{-1} min^{-1}$	Association of LPS and TLR4 in the plamsa membrane	Fixed,Table 1. Shin et al. 2007, 0.12~ 0.36		
11	TLP4LPSpm => LPSpm + TLR4pm	2.7	min^{-1}	Disassociation of TLR4LPS in the plamsa membrane	Fixed,Table 1. Shin et al. 2007, 0.6~3.6		
12	LPSen + TLR4en => TLR4LPSen	0.19	$\mu M^{-1} min^{-1}$	Association of LPS and TLR4 in the early endosome	#5		
13	TLR4LPSen => LPSen + TLR4en	2.7	min^{-1}	Disassociation of TLR4LPS in the early endosome	#6		
14	=> TLR4pm	2.6E-02	μM min^{-1}	TLR4 generation at the plamsa membrane	Fit		
15	TLR4pm =>	9.0E-01	min^{-1}	TLR4 depletion from the plamsa membrane	Fit		
16	TLR4en =>	2.9E+00	min^{-1}	TLR4 depletion from the early endosome	Fit		
17	TLR4pm => TLR4en	1.3E-01	min^{-1}	TLR4 translocate from plamsa membrane to early endosome	Fit		
18	TLR4en => TLR4pm	3.6E+00	min^{-1}	TLR4 translocate from early endosome to plamsa membrane	Fit		
19	TLR4LPSpm => TLR4LPSen	2.4E-01	min^{-1}	Receptor complex translocate from plamsa membrane to early endosome	Fit		
20	TLR4LPSen => TLR4LPSpm	0.04	min^{-1}	Receptor complex translocate from early endosome to plamsa membrane	Fit		
21	TLR4LPSpm =>	14.41	min^{-1}	Receptor complex degradation in the plamsa membrane	Fit		
22	TLR4LPSen =>	0.4	min^{-1}	Receptor complex degradation in the early endosome	Fit		
23	MYD88 => MYD88* ; TLR4LPSpm	3	$\mu M^{-1} min^{-1}$	MyD88 activation (by receptor complex) in the plasma membrane	Fit		
24		3	Hill coefficient		Derived from MyDDosome model		
25		5.8E-02	EC50: µM		Fit		
26	MYD88* => MYD88	0.3	min^{-1}	MyD88 Deactivation	Fit		
27	TRIF => TRIF* ; TLR4LPSen	0.39	$\mu M^{-1} min^{-1}$	Triff activation by receptor complex in the early endosome	Fit		
28	TRIF* => TRIF	1.2E-02	min^{-1}	Triff Deactivation	Fit		
TLR9							
29	=> TLR9	1.0E-04	μM^{-1} min^{-1}	Protein Synth.	Fit		
30	TLR9 =>	5.8E-03	min^{-1}	Protein Deg.	Fit		
31	CpG + TLR9 => TLR9CpG	6.0E-01	μM^{-1} min^{-1}	Asscociation	Fit		
32	TLR9CpG => CpG + TLR9	2.7E+00	min^{-1}	Dissociation	Fit		
33	MYD88 => MYD88* ; TLR4LPSpm	33	$\mu M^{-1} min^{-1}$	MyD88 activation (by receptor complex)	Fit		
34		3	Hill coefficient		Derived from MyDDosome model		
35		5.8E-02	EC50: µM		Fit		
TNFR module							
36	=> tnfrm	2.0E-07	min^{-1}	Protein Synth.	(Werner et al. 2008)		
37	tnfrm =>	5.8E-03	min^{-1}	Protein Deg.	(Werner et al. 2008)		
38	3 tnfrm => TNFR	1.0E-05	μM^{-1} min^{-1}	Asscociation	(Werner et al. 2008)		
39	TNFR => 3 tnfrm	1.0E-01	min^{-1}	Dissociation	(Werner et al. 2008)		
40	TNFR => (internalization)	1.7E-03	min^{-1}	Protein Deg.	(Werner et al. 2008)		
41	TNFR + TTR => C1_off	100.00	μM^{-1} min^{-1}	Asscociation	(Werner et al. 2008)		
42	C1_off => TNFR + TTR	0.75	min^{-1}	Dissociation	(Werner et al. 2008)		
43	C1_off => C1	3.0E+01	min^{-1}	Activation	(Werner et al. 2008)		
44	C1 => C1_off	2.0E+00	min^{-1}	Deactivation	(Werner et al. 2008)		
45	C1 => C1_off (A20 mediated)	1000.00	μM^{-1} min^{-1}	Deactivation	(Werner et al. 2008)		
46	C1 => TNFR + TTR	7.5E-01	min^{-1}	Dissociation	(Werner et al. 2008)		
47	C1_off => (internalization)	1.7E-03	min^{-1}	Protein Deg.	(Werner et al. 2008)		
48	C1 => (internalization)	1.7E-03	min^{-1}	Protein Deg.	(Werner et al. 2008)		
49	tnf =>	1.5E-02	min^{-1}	Protein Deg.	(Werner et al. 2008)		
50	tnf + 3tnfrm => TNFRtnf	1.1E+03	min^{-1}	Asscociation	(Werner et al. 2008)		
51	tnf + TNFR => TNRtnf	1.1E+03	min^{-1}	Asscociation	(Werner et al. 2008)		
52	TNFRtnf => TNFR + tnf	2.1E-02	min^{-1}	Dissociation	(Werner et al. 2008)		
53	TNFRtnf => (internalization)	1.7E-03	min^{-1}	Protein Deg.	(Werner et al. 2008)		
54	TNFRtnf + TTR => C1tnf_off	1.0E+02	μM^{-1} min^{-1}	Asscociation	(Werner et al. 2008)		
55	C1tnf_off => TNFRtnf +TTR	7.5E-01	min^{-1}	Dissociation	(Werner et al. 2008)		
56	C1tnf_off => C1tnf	3.0E+01	min^{-1}	Activation	(Werner et al. 2008)		
57	C1tnf => C1tnf_off	2.0E+00	min^{-1}	Deactivation	(Werner et al. 2008)		

58	C1tnf => C1tnf_off (A20 mediated)	1.0E+03	μM^{-1} min^{-1}	Deactivation	(Werner et al. 2008)		
59	C1tnf => TNFRtnf + TTR	7.5E-01	min^{-1}	Dissociation	(Werner et al. 2008)		
60	C1tnf_off => (internalization)	1.7E-03	min^{-1}	Protein Deg.	(Werner et al. 2008)		
61	C1tnf => (internalization)	1.7E-03	min^{-1}	Protein Deg.	(Werner et al. 2008)		
62	C1tnf_off => C1_off + tnf	2.1E-02	min^{-1}	Dissociation	(Werner et al. 2008)		
63	C1_off + tnf=> C1tnf_off	1.1E+03	μM^{-1} min^{-1}	Asscociation	(Werner et al. 2008)		
64	C1tnf => C1 + tnf	2.1E-02	min^{-1}	Dissociation	(Werner et al. 2008)		
65	C1 + tnf => C1tnf	1.1E+03	μM^{-1} min^{-1}	Asscociation	(Werner et al. 2008)		
IKK-NFkB module							***wt***
66	TRAF6 => TRAF6* ; MyD88*	4.9E+00	μM^{-1} min^{-1}	TRAF6 activation by MyD88*	Fit	**79**	7.5E+00
67	TRAF6 => TRAF6* ; TRIF*	1.3E+00	μM^{-1} min^{-1}	TRAF6 activation by TRIF*	Fit	**80**	3.4E+00
68	TRAF6* => TRAF6	0.22	min^{-1}	TRAF6 Deactivation	Fit		
69	IKKK_off => IKKK (C1 mediated)						
70	IKKK_off => IKKK (C1tnf mediated)						
71	IKKK => IKKK* ; TRAF6*	3.4E-01	μM^{-1} min^{-1}	IKKK activation by TRAF6*	Fit		IKK total multiplier
72	IKKK => IKKK*	5.0E-07	min^{-1}	Basal activation	(Werner et al. 2008)	**81**	0.06791
73	IKKK* => IKKK	0.25	min^{-1}	Deactivation	(Werner et al. 2008)		
74	IKK => IKK* ; IKKK*	520.00	μM^{-1} min^{-1}	Activation	(Werner et al. 2008)		LPS scale
75	IKK => IKK*	5.0E-05	min^{-1}	Basal activation	(Werner et al. 2008)	**82**	633.55
76	IKK* => IKK	2.0E-02	min^{-1}	Deactivation	(Werner et al. 2008)		
77	IKK* => IKKi	0.15	min^{-1}	Deactivation	(Werner et al. 2008)		
78	IKKi => IKK	0.02	min^{-1}	Deactivation	(Werner et al. 2008)		
IkB mRNA and Protein Synthesis Reactions							
79	=> IkBat (constitutive)	7.0E-05	min^{-1}	RNA Synth.	(Werner et al. 2008)		
80	=> IkBbt (constitutive)	1.0E-05	min^{-1}	RNA Synth.	(Werner et al. 2008)		
81	=> IkBet (constitutive)	1.0E-06	min^{-1}	RNA Synth.	(Werner et al. 2008)		
82		8	min^{-1}		(Werner et al. 2008)		
83		3.0	Hill Coefficient		(Werner et al. 2008)		
84	=> IkBat (induced by NFkBn)	0	Delay: min	RNA Synth.	(Werner et al. 2008)		
85		0.02	min^{-1}		(Werner et al. 2008)		
86		3	Hill Coefficient		(Werner et al. 2008)		
87	=> IkBbt (induced by NFkBn)	37	Delay: min	RNA Synth.	(Werner et al. 2008)		
88		0.3	min^{-1}		(Werner et al. 2008)		
89		3	Hill Coefficient		(Werner et al. 2008)		
90	=> IkBet (induced by NFkBn)	37	Delay: min	RNA Synth.	(Werner et al. 2008)		
91	IkBat =>	0.035	min^{-1}	RNA Deg.	(Werner et al. 2008)		
92	IkBbt =>	8.0E-03	min^{-1}	RNA Deg.	(Werner et al. 2008)		
93	IkBet =>	4.0E-03	min^{-1}	RNA Deg.	(Werner et al. 2008)		
94	=> IkBa	0.25	μM min^{-1}	Protein Synth.	(Werner et al. 2008)		
95	=> IkBb	0.25	μM min^{-1}	Protein Synth.	(Werner et al. 2008)		
96	=> IkBe	0.25	μM min^{-1}	Protein Synth.	(Werner et al. 2008)		
IkB and NFkB Cellular Localization Reactions							
97	IkBa => IkBan	0.09	min^{-1}	Import	(Werner et al. 2008)		
98	IkBb => IkBbn	0.009	min^{-1}	Import	(Werner et al. 2008)		
99	IkBe => IkBen	0.045	min^{-1}	Import	(Werner et al. 2008)		
100	NFkB => NFkBn	5.4	min^{-1}	Import	(Werner et al. 2008)		
101	IkBan => IkBa	0.012	min^{-1}	Export	(Werner et al. 2008)		
102	IkBbn => IkBb	0.012	min^{-1}	Export	(Werner et al. 2008)		
103	IkBen => IkBe	0.012	min^{-1}	Export	(Werner et al. 2008)		
104	NFkBn => NFkB	0.0048	min^{-1}	Export	(Werner et al. 2008)		
105	IkBaNFkB => IkBaNFkBn	0.276	min^{-1}	Import	(Werner et al. 2008)		
106	IkBbNFkB => IkBbNFkBn	0.0276	min^{-1}	Import	(Werner et al. 2008)		
107	IkBeNFkB => IkBeNFkBn	0.138	min^{-1}	Import	(Werner et al. 2008)		
108	IkBaNFkBn => IkBaNFkB	0.828	min^{-1}	Export	(Werner et al. 2008)		
109	IkBbNFkBn => IkBbNFkB	0.414	min^{-1}	Export	(Werner et al. 2008)		
110	IkBeNFkBn => IkBeNFkB	0.414	min^{-1}	Export	(Werner et al. 2008)		
IkB Protein Degradation Reactions							
111	IkBa =>	0.12	min^{-1}	Protein Deg.	(Werner et al. 2008)		
112	IkBb =>	0.18	min^{-1}	Protein Deg.	(Werner et al. 2008)		
113	IkBe =>	0.18	min^{-1}	Protein Deg.	(Werner et al. 2008)		
114	IkBan =>	0.12	min^{-1}	Protein Deg.	(Werner et al. 2008)		
115	IkBbn =>	0.18	min^{-1}	Protein Deg.	(Werner et al. 2008)		
116	IkBen =>	0.18	min^{-1}	Protein Deg.	(Werner et al. 2008)		
117	IkBaNFkB => NFkB	6.0E-05	min^{-1}	Protein Deg.	(Werner et al. 2008)		
118	IkBbNFkB => NFkB	6.0E-05	min^{-1}	Protein Deg.	(Werner et al. 2008)		
119	IkBeNFkB => NFkB	6.0E-05	min^{-1}	Protein Deg.	(Werner et al. 2008)		
120	IkBaNFkBn => NFkBn	6.0E-05	min^{-1}	Protein Deg.	(Werner et al. 2008)		
121	IkBbNFkBn => NFkBn	6.0E-05	min^{-1}	Protein Deg.	(Werner et al. 2008)		
122	IkBeNFkBn => NFkBn	6.0E-05	min^{-1}	Protein Deg.	(Werner et al. 2008)		
IkB:NFkB Association and Dissociation Reactions							
123	IkBa + NFkB => IkBaNFkB	30	μM^{-1} min^{-1}	Association	(Werner et al. 2008)		
124	IkBb + NFkB => IkBbNFkB	30	μM^{-1} min^{-1}	Association	(Werner et al. 2008)		
125	IkBe + NFkB => IkBeNFkB	30	μM^{-1} min^{-1}	Association	(Werner et al. 2008)		
126	IkBa + NFkBn => IkBaNFkBn	30	μM^{-1} min^{-1}	Association	(Werner et al. 2008)		
127	IkBb + NFkBn => IkBbNFkBn	30	μM^{-1} min^{-1}	Association	(Werner et al. 2008)		
128	IkBe + NFkBn => IkBeNFkBn	30	μM^{-1} min^{-1}	Association	(Werner et al. 2008)		

129	IkBaNFkB => IkBa + NFkB	6.0E-05	min^{-1}	Dissociation	(Werner et al. 2008)		
130	IkBbNFkB => IkBb + NFkB	6.0E-05	min^{-1}	Dissociation	(Werner et al. 2008)		
131	IkBeNFkB => IkBe + NFkB	6.0E-05	min^{-1}	Dissociation	(Werner et al. 2008)		
132	IkBaNFkBn => IkBa + NFkBn	6.0E-05	min^{-1}	Dissociation	(Werner et al. 2008)		
133	IkBbNFkBn => IkBb + NFkBn	6.0E-05	min^{-1}	Dissociation	(Werner et al. 2008)		
134	IkBeNFkBn => IkBe + NFkBn	6.0E-05	min^{-1}	Dissociation	(Werner et al. 2008)		
IKK-mediated IkB Degradation Reactions							
135	IkBa =>	0.36	min^{-1}	Protein Deg.	(Werner et al. 2008)		
136	IkBb =>	0.12	min^{-1}	Protein Deg.	(Werner et al. 2008)		
137	IkBe =>	0.18	min^{-1}	Protein Deg.	(Werner et al. 2008)		
138	IkBaNFkB => NFkB	0.36	min^{-1}	Protein Deg.	(Werner et al. 2008)		
139	IkBbNFkB => NFkB	0.12	min^{-1}	Protein Deg.	(Werner et al. 2008)		
140	IkBeNFkB => NFkB	0.18	min^{-1}	Protein Deg.	(Werner et al. 2008)		
A20 mRNA and Protein Synthesis and Degradation Reactions							
141	=> A20t (constitutive)	2.00E-06	min^{-1}	RNA Synth.	(Werner et al. 2008)		
142		0.40	μM^{-2} min^{-1}		(Werner et al. 2008)		
143		3.00	Hill Coefficient		(Werner et al. 2008)		
144		0	Delay: min		(Werner et al. 2008)		
145	=> A20t (induced by NFkBn)	120	Shutdown: min	RNA Synth.	(Werner et al. 2008)		
146	A20t =>	0.04	min^{-1}	RNA Deg.	(Werner et al. 2008)		
147		0.25	min^{-1}		(Werner et al. 2008)		
148	=> A20	30	Delay: min	Protein Deg.	(Werner et al. 2008)		
149	A20 =>	0.0029	min^{-1}	Protein Deg.	(Werner et al. 2008)		
TNF production module							
	=> TNFnacent (Constutive)	1.00E-05		RNA Synth.	Fit		
	=> TNFnacent (induced by NFkBn)	1		RNA Synth.	Fixed		
		2			Fixed		
		0.65			Fit		
	TNFnacent => TNFmRNA	0.4		mRNA process	Fit		
		0.02	/- (30min): min^{-1}	mRNA Deg.	Measure		
	TNFmRNA =>	0.07	trn-/- (30min):min^{-1}		Measure		
	=> proTNF	0.05		Protein Synth.	Fit		
	proTNF =>	0.07		Protein Deg.	Fit		
	proTNF => TNF	0.07		Secretion	Fit		