	Reaction name	Reaction equation	Rate equation	Kinetic parameters	
1	MYD881) Receptor Complex Formation	LPS + LBP + CD14 + TLR4 + MyD88 + IRAK4 + TIRAP = LPS:LBP:CD14:TLR4:TIRAP:MyD88:IRAK4	$v^1 = \frac{kf^1 \cdot [LPS] \cdot [LBP] \cdot [CD14] \cdot [TLR4] \cdot [MYD88] \cdot [IRAK4] \cdot [TIRAP] - kr^1 \cdot [LPS:LBP:CD14:TLR4:TIRAP:MyD88:IRAK4]}{}$	kf^1 kr^1	0.0001 ml^6/(µmol^6*s) 0.0001 1/s
2	MYD882) IRAK1 and TRAF6 Phosphorylation	IRAK1 + TRAF6 = TRAF6:IRAK1[P]; LPS:LBP:CD14:TLR4:TIRAP:MyD88:IRAK4	$v^2 = \frac{kf^2 \cdot [LPS:LBP:CD14:TLR4:TIRAP:MyD88:IRAK4] \cdot [TRAF6] \cdot [IRAK1] - kr^2 \cdot [TRAF6:IRAK1[P]]}{}$	kf^2 kr^2	0.001 ml^2/(µmol^2*s) 0.001 1/s
3	MYD883) TAK/TAB Binds to TRAF6	TRAF6:IRAK1[P] + TAK1:TAB1:TAB2 = TAK1:TAB1:TAB2:TRAF6	$v^3 = \frac{kf^3 \cdot [TRAF6:IRAK1[P]] \cdot [TAK1:TAB1:TAB2] - kr^3 \cdot [TAK1:TAB1:TAB2:TRAF6]}{}$	kf^3 kr^3	0.003 ml/(µmol*s) 0.01 1/s
4	MYD884) IKK Phosphorylation by TAK1	IKK -> IKK[P]; TAK1:TAB1:TAB2:TRAF6	$v^4 = \frac{k^4 \cdot [TAK1:TAB1:TAB2:TRAF6] \cdot [IKK]}{km^4 + [IKK]}$	k^4 km^4	0.1 1/s 0.1 µmol/ml
5	MYD885) IKK[P] Dephosphorylation	IKK[P] -> IKK	$v^5 = kf^5 \cdot [IKK[P]]$	kf^5	0.1 1/s
6	TRIF01) Receptor Complex Formation	LPS + LBP + CD14 + TLR4 + TRIF + TRAM + RIP1 + TBK1/IKKe = LPS:LBP:CD14:TLR4:RIP1:TRAM:TRIF:TBK1/IKKe	$v^6 = \frac{kf^6 \cdot [LPS] \cdot [LBP] \cdot [CD14] \cdot [TLR4] \cdot [TRIF] \cdot [TRAM] \cdot [RIP1] \cdot [TBK1/IKKe] - kr^6 \cdot [LPS:LBP:CD14:TLR4:TRAM:TRIF:TBK1/IKKe]}{}$	kf^6 kr^6	0.0001 ml^7/(µmol^7*s) 0.0001 1/s
7	TRIF02) IRF3 Phosphorylation	IRF3 -> IRF3[P]; LPS:LBP:CD14:TLR4:RIP1:TRAM:TRIF:TBK/IKKe	$v^7 = \frac{k^7 \cdot [LPS:LBP:CD14:TLR4:RIP1:TRAM:TRIF:TBK/IKKe] \cdot [IRF3]}{km^7 + [IRF3]}$	k^7 km^7	0.1 1/s 0.1 µmol/ml
8	TRIF03) IRF3 Dephosphorylation	IRF3[P] -> IRF3	$v^8 = kf^8 \cdot [IRF3[P]]$	kf^8	0.1 1/s
9	TRIF04) IRF3 Nuclear Import/Export	IRF3[P] = IRF3[P](nuc)	$v^9 = kf^9 \cdot [IRF3[P]] - kr^9 \cdot [IRF3[P](nuc)]$	kf^9 kr^9	0.1 1/s 0.1 1/s
10	TRIF05) Inducible TNFa Synthesis	2 * IRF3[P](nuc) -> TNFa + 2 * IRF3[P](nuc)	$v^{10} = kf^{10} \cdot 2 \cdot [IRF3[P](nuc)]$	kf^{10}	0.02 ml/(µmol*s)
11	TRIF06) Constitutive TNFa Synthesis	source -> TNFa	$v^{11} = kf^{11} \cdot [source]$	kf^{11}	0.001 1/s
12	TRIF07)Inducible TNFa Synthesis by NFkB	2 * NFkB(nuc) -> TNFa + 2 * NFkB(nuc)	$v^{12} = kf^{12} \cdot 2 \cdot [NFkB(nuc)]$	kf^{12}	0.001 ml/(µmol*s)
13	TRIF08) TNFa Degradation	TNFa -> sink	$v^{13} = kf^{13} \cdot [TNFa]$	kf^{13}	0.1 1/s
14	TRIF09) TNFa Receptor Complex Formation	TNFa + TNFR1 + TRAF2 + TRADD + RIP1 = TNFa:TNFR1:TRAF2:TRADD:RIP1	$v^{14} = \frac{kf^{14} \cdot [TNFa] \cdot [TNFR1] \cdot [TRAF2] \cdot [TRADD] \cdot [RIP1] - kr^{14} \cdot [TNFa:TNFR1:TRAF:2:TRADD:RIP1]}{}$	kf^{14} kr^{14}	0.1 ml^4/(µmol^4*s) 0.1 1/s
15	TRIF10) IKK Phosphorylation by RIP1	IKK -> IKK[P]; TNFa:TNFR1:TRAF2:TRADD:RIP1	$v^{15} = \frac{k^{15} \cdot [TNFa:TNFR1:TRAF2:TRADD:RIP1] \cdot [IKK]}{km^{15} + [IKK]}$	k^{15} km^{15}	0.1 1/s 0.1 µmol/ml
16	NFkB01) IkBa:NFkB Binding	IkBa + NFkB = IkBa:NFkB	$v^{16} = kf^{16} \cdot [IkBa] \cdot [NFkB] - kr^{16} \cdot [IkBa:NFkB]$	kf^{16} kr^{16}	0.5 ml/(µmol*s) 0.0005 1/s
17	NFkB02) IKK:IkBa:NFkB Binding (1)	IKK[P] + IkBa:NFkB = IKK[P]:IkBa:NFkB	$v^{17} = kf^{17} \cdot [IKK[P]] \cdot [IkBa:NFkB] - kr^{16} \cdot [IKK[P]:IkBa:NFkB]$	kf^{17} kr^{17}	0.185 ml/(µmol*s) 0.0125 1/s
18	NFkB03) IkBb:NFkB Binding	IkBb + NFkB = IkBb:NFkB	$v^{18} = kf^{18} \cdot [IkBb] \cdot [NFkB] - kr^{18} \cdot [IkBb:NFkB]$	kf^{18} kr^{18}	0.5 ml/(µmol*s) 0.0005 1/s
19	NFkB04) IKK:IkBb:NFkB Binding (1)	IKK[P] + IkBb:NFkB = IKK[P]:IkBb:NFkB	$v^{19} = kf^{19} \cdot [IKK[P]] \cdot [IkBb:NFkB] - kr^{19} \cdot [IKK[P]:IkBb:NFkB]$	kf^{19} kr^{19}	0.048 ml/(µmol*s) 0.00175 1/s
20	NFkB05) IkBe:NFkB Binding	IkBe + NFkB = IkBe:NFkB	$v^{20} = kf^{20} \cdot [IkBe] \cdot [NFkB] - kr^{20} \cdot [IkBe:NFkB]$	kf^{20} kr^{20}	0.5 ml/(µmol*s) 0.0005 1/s
21	NFkB06) IKK:IkBe:NFkB Binding (1)	IKK[P] + IkBe:NFkB = IKK[P]:IkBe:NFkB	$v^{21} = kf^{21} \cdot [IKK[P]] \cdot [IkBe:NFkB] - kr^{21} \cdot [IKK[P]:IkBe:NFkB]$	kf^{21} kr^{21}	0.07 ml/(µmol*s) 0.00175 1/s
22	NFkB07) IKK:IkBa:NFkB Catalysis	IKK[P]:IkBa:NFkB -> IKK[P] + NFkB	$v^{22} = kf^{22} \cdot [IKK[P]:IkBa:NFkB]$	kf^{22}	0.0204 1/s
23	NFkB08) IKK:IkBb:NFkB Catalysis	IKK[P]:IkBb:NFkB -> IKK[P] + NFkB	$v^{23} = kf^{23} \cdot [IKK[P]:IkBb:NFkB]$	kf^{23}	0.0075 1/s
24	NFkB09) IKK:IkBe:NFkB Catalysis	IKK[P]:IkBe:NFkB -> IKK[P] + NFkB	$v^{24} = kf^{24} \cdot [IKK[P]:IkBe:NFkB]$	kf^{24}	0.011 1/s
25	NFkB10) IkBa:NFkB Constitutive Degradation	IkBa:NFkB -> NFkB	$v^{25} = kf^{25} \cdot [IkBa:NFkB]$	kf^{25}	2.25E-05 1/s
26	NFkB11) IkBb:NFkB Constitutive Degradation	IkBb:NFkB -> NFkB	$v^{26} = kf^{26} \cdot [IkBb:NFkB]$	kf^{26}	2.25E-05 1/s
27	NFkB12) IkBe:NFkB Constitutive Degradation	IkBe:NFkB -> NFkB	$v^{27} = kf^{27} \cdot [IkBe:NFkB]$	kf^{27}	2.25E-05 1/s
28	NFkB13) NFkB Nuclear Import/Export	NFkB = NFkB(nuc)	$v^{28} = kf^{28} \cdot [NFkB] - kr^{28} \cdot [NFkB(nuc)]$	kf^{28} kr^{28}	0.09 1/s 8.00E-05 1/s
29	NFkB14) Nuclear IkBa:NFkB Binding	IkBa(nuc) + NFkB(nuc) = IkBa:NFkB(nuc)	$v^{29} = kf^{29} \cdot [IkBa(nuc)] \cdot [NFkB(nuc)] - kr^{29} \cdot [IkBa:NFkB(nuc)]$	kf^{29} kr^{29}	0.5 ml/(µmol*s) 0.0005 1/s
30	NFkB15) Nuclear IkBb:NFkB Binding	IkBb(nuc) + NFkB(nuc) = IkBb:NFkB(nuc)	$v^{30} = kf^{30} \cdot [IkBb(nuc)] \cdot [NFkB(nuc)] - kr^{30} \cdot [IkBb:NFkB(nuc)]$	kf^{30} kr^{30}	0.5 ml/(µmol*s) 0.0005 1/s
31	NFkB16) Nuclear IkBe:NFkB Binding	IkBe(nuc) + NFkB(nuc) = IkBe:NFkB(nuc)	$v^{31} = kf^{31} \cdot [IkBe(nuc)] \cdot [NFkB(nuc)] - kr^{31} \cdot [IkBe:NFkB(nuc)]$	kf^{31} kr^{31}	0.5 ml/(µmol*s) 0.0005 1/s
32	NFkB17) Constitutive IkBa mRNA Synthesis	source -> IkBa_mRNA	$v^{32} = kf^{32} \cdot [source]$	kf^{32}	1.54E-06 1/s
33	NFkB18) Inducible IkBa mRNA Synthesis	2 * NFkB(nuc) -> IkBa_mRNA + 2 * NFkB(nuc)	$v^{33} = kf^{33} \cdot 2 \cdot [NFkB(nuc)]$	kf^{33}	0.0165 ml/(µmol*s)
34	NFkB19) IkBa mRNA degradation	IkBa_mRNA -> sink	$v^{34} = kf^{34} \cdot [IkBa_mRNA]$	kf^{34}	0.00028 1/s
35	NFkB20) Constitutive IkBb mRNA Synthesis	source -> IkBb_mRNA	$v^{35} = kf^{35} \cdot [source]$	kf^{35}	1.78E-07 1/s
36	NFkB21) IkBb mRNA degradation	IkBb_mRNA -> sink	$v^{36} = kf^{36} \cdot [IkBb_mRNA]$	kf^{36}	0.00028 1/s
37	NFkB22) Constitutive IkBe mRNA Synthesis	source -> IkBe_mRNA	$v^{37} = kf^{37} \cdot [source]$	kf^{37}	1.27E-07 1/s
38	NFkB23) IkBe mRNA degradation	IkBe_mRNA -> sink	$v^{38} = kf^{38} \cdot [IkBe_mRNA]$	kf^{38}	0.00028 1/s
39	NFkB24) IKK:IkBa Binding	IKK[P] + IkBa = IKK[P]:IkBa	$v^{39} = kf^{39} \cdot [IKK[P]] \cdot [IKBa] - kr^{39} \cdot [IKK[P]:IkBa]$	kf^{39} kr^{39}	0.0225 ml/(µmol*s) 0.00125 1/s
40	NFkB25) IkBa Translation	IkBa_mRNA -> IkBa + IkBa_mRNA	$v^{40} = kf^{40} \cdot [IkBa_mRNA]$	kf^{40}	0.00408 1/s
41	NFkB26) IkBa Degradation	IkBa -> sink	$v^{41} = kf^{41} \cdot [IkBa]$	kf^{41}	0.000113 1/s
42	NFkB27) IkBa Nuclear Import/Export	IkBa = IkBa(nuc)	$v^{42} = kf^{42} \cdot [IKBa] - kr^{42} \cdot [IkBa(nuc)]$	kf^{42} kr^{42}	0.0003 1/s 0.0002 1/s
43	NFkB28) IKK:IkBb Binding	IKK[P] + IkBb = IKK[P]:IkBb	$v^{43} = kf^{43} \cdot [IKK[P]] \cdot [IKBb] - kr^{43} \cdot [IKK[P]:IkBb]$	kf^{43} kr^{43}	0.006 ml/(µmol*s) 0.00175 1/s
44	NFkB29) IkBb Translation	IkBb_mRNA -> IkBb + IkBb_mRNA	$v^{44} = kf^{44} \cdot [IkBb_mRNA]$	kf^{44}	0.00408 1/s
45	NFkB30) IkBb Degradation	IkBb -> sink	$v^{45} = kf^{45} \cdot [IkBb]$	kf^{45}	0.000113 1/s
46	NFkB31) IkBb Nuclear Import/Export	IkBb = IkBb(nuc)	$v^{46} = kf^{46} \cdot [IKBb] - kr^{46} \cdot [IkBb(nuc)]$	kf^{46} kr^{46}	0.00015 1/s 0.0001 1/s
47	NFkB32) IKK:IkBe Binding	IKK[P] + IkBe = IKK[P]:IkBe	$v^{47} = kf^{47} \cdot [IKK[P]] \cdot [IKBe] - kr^{47} \cdot [IKK[P]:IkBe]$	kf^{47} kr^{47}	0.009 ml/(µmol*s) 0.00175 1/s
48	NFkB33) IkBe Translation	IkBe_mRNA -> IkBe + IkBe_mRNA	$v^{48} = kf^{48} \cdot [IkBe_mRNA]$	kf^{48}	0.00408 1/s
49	NFkB34) IkBe Degradation	IkBe -> sink	$v^{49} = kf^{49} \cdot [IkBe]$	kf^{49}	0.000113 1/s
50	NFkB35) IkBe Nuclear Import/Export	IkBe = IkBe(nuc)	$v^{50} = kf^{50} \cdot [IKBe] - kr^{50} \cdot [IkBe(nuc)]$	kf^{50} kr^{50}	0.00015 1/s 0.0001 1/s
51	NFkB36) IKK:IkBa:NFkB Binding (2)	IKK[P]:IkBa + NFkB = IKK[P]:IkBa:NFkB	$v^{51} = kf^{51} \cdot [IKK[P]:IkBa] \cdot [NFkB] - kr^{51} \cdot [IKK[P]:IkBa:NFkB]$	kf^{51} kr^{51}	0.5 ml/(µmol*s) 0.0005 1/s
52	NFkB37) IkBa:NFkB Nuclear Export	IkBa:NFkB(nuc) -> IkBa:NFkB	$v^{52} = kf^{52} \cdot [IkBa:NFkB(nuc)]$	kf^{52}	0.0138 1/s
53	NFkB38) IKK:IkBb:NFkB Binding (2)	IKK[P]:IkBb + NFkB = IKK[P]:IkBb:NFkB	$v^{53} = kf^{53} \cdot [IKK[P]:IkBb] \cdot [NFkB] - kr^{53} \cdot [IKK[P]:IkBb:NFkB]$	kf^{53} kr^{53}	0.5 ml/(µmol*s) 0.0005 1/s
54	NFkB39) IkBb:NFkB Nuclear Export	IkBb:NFkB(nuc) -> IkBb:NFkB	$v^{54} = kf^{54} \cdot [IkBb:NFkB(nuc)]$	kf^{54}	0.0052 1/s
55	NFkB40) IKK:IkBe:NFkB Binding (2)	IKK[P]:IkBe + NFkB = IKK[P]:IkBe:NFkB	$v^{55} = kf^{55} \cdot [IKK[P]:IkBe] \cdot [NFkB] - kr^{55} \cdot [IKK[P]:IkBe:NFkB]$	kf^{55} kr^{55}	0.5 ml/(µmol*s) 0.0005 1/s
56	NFkB41) IkBe:NFkB Nuclear Export	IkBe:NFkB(nuc) -> IkBe:NFkB	$v^{56} = kf^{56} \cdot [IkBe:NFkB(nuc)]$	kf^{56}	0.0052 1/s
57	NFkB42) IKK:IkBa Catalysis	IKK[P]:IkBa -> IKK[P]	$v^{57} = kf^{57} \cdot [IKK[P]:IkBa]$	kf^{57}	0.00407 1/s
58	NFkB43) IKK:IkBb Catalysis	IKK[P]:IkBb -> IKK[P]	$v^{58} = kf^{58} \cdot [IKK[P]:IkBb]$	kf^{58}	0.0015 1/s
59	NFkB44) IKK:IkBe Catalysis	IKK[P]:IkBe -> IKK[P]	$v^{59} = kf^{59} \cdot [IKK[P]:IkBe]$	kf^{59}	0.0022 1/s