**Supplementary file 2.** **List of biochemical reactions and rate constants in the model**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Param**  **No.** | **Reaction** | | **Parameter**  **Value** | **Category** | **Unit** | | **Location** | | | **Reference** | |
| **1** | tIkBa | | 6.20E-02 | RNA synthesis  (constitutive) | nM  min-1 | | \_\_\_ | | | refined the published parameter value[1](#_ENREF_1) with a 4.8 fold increase based on our experimental measurements | |
| **2** | tIkBb | | 2.00E-03 | RNA synthesis  (constitutive) | nM  min-1 | | \_\_\_ | | | fitted by increasing the published parameter[1](#_ENREF_1) value by 3 fold | |
| **3** | tIkBe | | 2.50E-04 | RNA synthesis  (constitutive) | nM  min-1 | | \_\_\_ | | | fitted by increasing the published parameter value[1](#_ENREF_1) by 2 fold | |
| **4** | tp100 | | 1.90E-04 | RNA synthesis  (constitutive) | nM  min-1 | | \_\_\_ | | | refined the published parameter value[1](#_ENREF_1) with a 6.3 fold increase based on our experimental measurements | |
| **5** | tNFkB1 | | 1.40E-05 | RNA synthesis  (constitutive) | nM  min-1 | | \_\_\_ | | | refined the published parameter value[1](#_ENREF_1) with a 2 fold decrease to achieve 100-150nM NFB peak activity in TNF regime | |
| **6** | tIkBa  (Induced by RelA:p50) | | 4.00E-07 | RNA synthesis  delay 0 min,  Hill coefficient 3 | nM-2  min-1 | | \_\_\_ | | | parameterized to achieve ~5 fold induction of IB mRNA upon stimulation based on the experimental data (Figure 5A) | |
| **7** | tIkBb  (Induced by RelA:p50) | | 1.20E-08 | RNA synthesis  delay 37 min,  Hill coefficient 3 | nM-2  min-1 | | \_\_\_ | | | fitted by increasing the published parameter value[2](#_ENREF_2) by 1.7 fold | |
| **8** | tIkBe  (Induced by RelA:p50) | | 5.00E-09 | RNA synthesis  delay 37min,  Hill coefficient 3 | nM-2  min-1 | | \_\_\_ | | | parameterized to achieve similar fold inductions of IB and IkBe mRNAs upon stimulation | |
| **9** | tp100  (Induced by RelA:p50) | | 2.00E-08 | RNA synthesis  delay 60min,  Hill coefficient 3 | nM-2  min-1 | | \_\_\_ | | | refined the published parameter value[3](#_ENREF_3) with a 1.25 fold decrease based on our experimental measurements (Figure 5A and 5B). | |
| **10** | tIkBa  (Induced by RelA:p52) | | 4.00E-07 | RNA synthesis  delay 0 min,  Hill coefficient 3 | nM-2  min-1 | | \_\_\_ | | | assumed to be identical to that of RelA:p50 dimer (6), based on appendix figure 4B presented in the Appendix-1 | |
| **11** | tIkBb  (Induced by RelA:p52) | | 1.20E-08 | RNA synthesis  delay 37 min,  Hill coefficient 3 | nM-2  min-1 | | \_\_\_ | | | similarly assumed to be identical to that of RelA:p50 dimer (7), | |
| **12** | tIkBe  (Induced by RelA:p52) | | 5.00E-09 | RNA synthesis  delay 37 min,  Hill coefficient 3 | nM-2  min-1 | | \_\_\_ | | | similarly assumed to be identical to that of RelA:p50 dimer (8), | |
| **13** | tp100  (Induced by RelA:p52) | | 2.00E-08 | RNA synthesis  delay 60min,  Hill coefficient 3 | nM-2  min-1 | | \_\_\_ | | | assumed to be identical to that of RelA:p50 dimer (9), based on appendix figure 4C presented in the Appendix-1 | |
| **14** | tIkBa  | | 3.50E-02 | RNA degradation | min-1 | | cytoplasm | | | identical as in[3](#_ENREF_3) | |
| **15** | tIkBb  | | 3.00E-03 | RNA degradation | min-1 | | cytoplasm | | | identical as in[3](#_ENREF_3) | |
| **16** | tIkBe  | | 4.00E-03 | RNA degradation | min-1 | | cytoplasm | | | identical as in[3](#_ENREF_3) | |
| **17** | tp100  | | 1.60E-03 | RNA degradation | min-1 | | cytoplasm | | | parameterized based on the experimental data presented in appendix figure 2B | |
| **18** | tNFkB1  | | 1.00E-03 | RNA degradation | min-1 | | cytoplasm | | | composite species, constrained the parameter value to achieve routinely observed 100-150nM NFB peak activity in TNF regime | |
| **19** | IkBa | | 1.00E+00 | protein synthesis | min-1 | | cytoplasm | | | constrained considering the published rate for polypeptide synthesis[4](#_ENREF_4) and the molecular size of the protein | |
| **20** | IkBb | | 1.00E+00 | protein synthesis | min-1 | | cytoplasm | | | constrained considering the published rate for polypeptide synthesis[4](#_ENREF_4) and the molecular size of the protein | |
| **21** | IkBe | | 1.00E+00 | protein synthesis | min-1 | | cytoplasm | | | constrained considering the published rate for polypeptide synthesis[4](#_ENREF_4) and the molecular size of the protein | |
| **22** | p100 | | 5.00E-01 | protein synthesis | min-1 | | cytoplasm | | | constrained considering the published rate for polypeptide synthesis[4](#_ENREF_4) and the molecular size of the protein | |
| **23** | RelA:p50 | | 1.00E+00 | protein synthesis | min-1 | | cytoplasm | | | composite species, constrained considering the published rate for polypeptide synthesis[4](#_ENREF_4) and the molecular size of the protein | |
| **24** | IB  | | 1.38E-01 | constitutive NFkB  or IkB degradation | min-1 | | nucleus & cytoplasm | | | refined the published parameter value[2](#_ENREF_2) with a 1.1 fold increase based on our measurements (appendix figure 3A) | |
| **25** | IkBb  | | 2.07E-01 | constitutive NFkB  or IkB degradation | min-1 | | nucleus & cytoplasm | | | similarly refined the published parameter value[2](#_ENREF_2) with a 1.1 fold increase for fitting | |
| **26** | IkBe  | | 1.73E-01 | constitutive NFkB  or IkB degradation | min-1 | | nucleus & cytoplasm | | | identical to the previously published parameter value[2](#_ENREF_2) | |
| **27** | IkBd  | | 2.40E-04 | constitutive NFkB  or IkB degradation | min-1 | | nucleus & cytoplasm | | | fitted based on the experimental data presented in appendix figure 3A. | |
| **28** | p100  | | 4.00E-01 | constitutive NFkB  or IkB degradation | min-1 | | nucleus & cytoplasm | | | free monomer p100 which was assumed to be unstable, similar to free IB | |
| **29** | RelA:p50  | | 2.40E-04 | constitutive NFkB  or IkB degradation | min-1 | | nucleus & cytoplasm | | | identical as in[1](#_ENREF_1) | |
| **30** | RelA:p52  | | 2.40E-04 | constitutive NFkB  or IkB degradation | min-1 | | nucleus & cytoplasm | | | assumed to be identical to that of RelA:p50 dimer (29), | |
| **31** | IkBa + NEMO-IKK | | 1.95E-03 | NEMO mediated  free IkB degradation | nM-1  min-1 | | cytoplasm | | | refined the published parameter value[1](#_ENREF_1) with a 1.4 fold increase based on our measurements (appendix figure 3B) suggesting similar degradation of bound and free IBs. | |
| **32** | IkBb + NEMO-IKK | | 5.00E-04 | NEMO mediated  free IkB degradation | nM-1  min-1 | | cytoplasm | | | similarly refined the published parameter value[1](#_ENREF_1) with a 1.1 fold increase for fitting | |
| **33** | IkBe + NEMO-IKK | | 5.00E-04 | NEMO mediated  free IkB degradation | nM-1  min-1 | | cytoplasm | | | similarly refined the published parameter value[1](#_ENREF_1) with a 1.8 fold decrease for fitting | |
| **34** | IkBd+NIK-IKK1  | | 1.00E-03 | NIK mediated  free IkBd degradation | nM-1  min-1 | | cytoplasm | | | fitted based on the experimental data presented in appendix figure 3C. | |
| **35** | IkBa IkBan | | 9.00E-02 | nuclear import | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **36** | IkBb IkBbn | | 9.00E-03 | nuclear import | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **37** | IkBe IkBen | | 4.50E-02 | nuclear import | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **38** | IkBd IkBdn | | 4.50E-02 | nuclear import | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **39** | RelA:p50  RelA:p50n | | 5.40E+00 | nuclear import | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **40** | RelA:p52  RelA:p52n | | 5.40E+00 | nuclear import | min-1 | | \_\_\_ | | | assumed to be similar to that of RelA:p50 dimer (39). Note, nuclear import of NF-B dimers are largely determined by the nuclear localization signal present in RelA. |
| **41** | IkBan IkBa | | 1.20E-02 | nuclear export | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **42** | IkBbn IkBb | | 1.20E-02 | nuclear export | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **43** | IkBen IkBe | | 1.20E-02 | nuclear export | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **44** | IkBdn IkBd | | 1.20E-02 | nuclear export | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **45** | RelA:p50n RelA:p50 | | 1.80E-03 | nuclear export | min-1 | | \_\_\_ | | | fitted by decreasing the published parameter value[2](#_ENREF_2) by 2.7 fold |
| **46** | RelA:p52n  RelA:p52 | | 1.80E-03 | nuclear Export | min-1 | | \_\_\_ | | | assumed to be similar to that of RelA:p50 dimer (45) |
| **47** | RelA:p50 + IkBa   IkBa:RelA:p50 | | 3.00E-02 | NFkB IkB association | nM-1  min-1 | | cytoplasm & nucleus | | | identical as in[2](#_ENREF_2) |
| **48** | RelA:p50 + IkBb   IkBb:RelA:p50 | | 3.00E-02 | NFkB IkB association | nM-1  min-1 | | cytoplasm & nucleus | | | identical as in[2](#_ENREF_2) |
| **49** | RelA:p50 + IkBe   IkBe:RelA:p50 | | 3.00E-02 | NFkB IkB association | nM-1  min-1 | | cytoplasm & nucleus | | | identical as in[2](#_ENREF_2) |
| **50** | RelA:p50 + IkBd   IkBd:RelA:p50 | | 3.00E-02 | NFkB IkB association | nM-1  min-1 | | cytoplasm & nucleus | | | identical as in[2](#_ENREF_2) |
| **51** | RelA:p52 + IkBa  IkBa:RelA:p52 | | 1.50E-03 | NFkB IkB association | nM-1  min-1 | | cytoplasm & nucleus | | | relative to RelA:p50 dimer, RelA:p52 binding to IkBs were weak (appendix figure 4D). Accordingly, slower association rates for RelA:p52 binding to IkBs were used. |
| **52** | RelA:p52 + IkBb  IkBb:RelA:p52 | | 1.50E-03 | NFkB IkB association | nM-1  min-1 | | cytoplasm & nucleus | | | same as 51. |
| **53** | RelA:p52 + IkBe  IkBe:RelA:p52 | | 1.50E-03 | NFkB IkB association | nM-1  min-1 | | cytoplasm & nucleus | | | same as 51. |
| **54** | RelA:p52 + IkBd  IkBd:RelA:p52 | | 1.50E-03 | NFkB IkB association | nM-1  min-1 | | cytoplasm & nucleus | | | same as 51. |
| **55** | IkBa:RelA:p50  RelA:p50 + IkBa | | 6.00E-05 | NFkB:IkB complex dissociation | min-1 | | cytoplasm &nucleus | | | identical as in[2](#_ENREF_2) |
| **56** | IkBb:RelA:p50  RelA:p50 + IkBb | | 6.00E-05 | NFkB:IkB complex dissociation | min-1 | | cytoplasm &nucleus | | | identical as in[2](#_ENREF_2) |
| **57** | IkBe:RelA:p50  RelA:p50 + IkBe | | 6.00E-05 | NFkB:IkB complex dissociation | min-1 | | cytoplasm &nucleus | | | identical as in[2](#_ENREF_2) |
| **58** | IkBd:RelA:p50  RelA:p50 + IkBd | | 6.00E-05 | NFkB:IkB complex dissociation | min-1 | | cytoplasm &nucleus | | | identical as in[2](#_ENREF_2) |
| **59** | IkBa:RelA:p52  RelA:p52 + IkBa | | 6.00E-05 | NFkB:IkB complex dissociation | min-1 | | cytoplasm &nucleus | | | assumed to be similar to that of RelA:p50 dimer (55). |
| **60** | IkBb:RelA:p52  RelA:p52 + IkBb | | 6.00E-05 | NFkB:IkB complex dissociation | min-1 | | cytoplasm &nucleus | | | assumed to be similar to that of RelA:p50 dimer (56). |
| **61** | IkBe:RelA:p52  RelA:p52 + IkBe | | 6.00E-05 | NFkB:IkB complex dissociation | min-1 | | cytoplasm &nucleus | | | assumed to be similar to that of RelA:p50 dimer (57). |
| **62** | IkBd:RelA:p52  RelA:p52 + IkBd | | 6.00E-05 | NFkB:IkB complex dissociation | min-1 | | cytoplasm & nucleus | | | assumed to be similar to that of RelA:p50 dimer (58). |
| **63** | IB:RelA:p50   RelA:p50 | | 6.00E-05 | constitutive degradation of IkB within NFkB:IkB complex | min-1 | | cytoplasm &nucleus | | | identical as in[2](#_ENREF_2) |
| **64** | IkBb: RelA:p50   RelA:p50 | | 6.00E-05 | constitutive degradation of IkB within NFkB:IkB complex | min-1 | | cytoplasm &nucleus | | | identical as in[2](#_ENREF_2) |
| **65** | IkBe:RelA:p50   RelA:p50 | | 6.00E-05 | constitutive degradation of IkB within NFkB:IkB complex | min-1 | | cytoplasm &nucleus | | | identical as in[2](#_ENREF_2) |
| **66** | IkBd:RelA:p50   RelA:p50 | | 6.00E-05 | constitutive degradation of IkB within NFkB:IkB complex | min-1 | | cytoplasm &nucleus | | | identical as in[2](#_ENREF_2) |
| **67** | IB:RelA:p52   RelA:p52 | | 6.00E-05 | constitutive degradation of IkB within NFkB:IkB complex | min-1 | | cytoplasm &nucleus | | | assumed to be similar to that of RelA:p50 dimer (63). |
| **68** | IkBb:RelA:p52   RelA:p52 | | 6.00E-05 | constitutive degradation of IkB within NFkB:IkB complex | min-1 | | cytoplasm &nucleus | | | assumed to be similar to that of RelA:p50 dimer (64). |
| **69** | IkBe:RelA:p52   RelA:p52 | | 6.00E-05 | constitutive degradation of IkB within NFkB:IkB complex | min-1 | | cytoplasm &nucleus | | | assumed to be similar to that of RelA:p50 dimer (65). |
| **70** | IkBd: RelA:p52   RelA:p52 | | 6.00E-05 | constitutive degradation of IkB within NFkB:IkB complex | min-1 | | cytoplasm &nucleus | | | assumed to be similar to that of RelA:p50 dimer (66). |
| **71** | IkBa: RelA:p50 IkBa | | 6.00E-05 | constitutive degradation of NFkB within NFkB:IkB complex | min-1 | | cytoplasm & nucleus | | | fitted by decreasing the published parameter value[1](#_ENREF_1) by 4 fold |
| **72** | IkBb:RelA:p50 IkBb | | 6.00E-05 | constitutive degradation of NFkB within NFkB:IkB complex | min-1 | | cytoplasm & nucleus | | | fitted by decreasing the published parameter value[1](#_ENREF_1) by 4 fold |
| **73** | IkBe:RelA:p50 IkBe | | 6.00E-05 | constitutive degradation of NFkB within NFkB:IkB complex | min-1 | | cytoplasm & nucleus | | | fitted by decreasing the published parameter value[1](#_ENREF_1) by 4 fold |
| **74** | IkBd:RelA:p50 IkBd | | 6.00E-05 | constitutive degradation of NFkB within NFkB:IkB complex | min-1 | | cytoplasm & nucleus | | | fitted by decreasing the published parameter value[1](#_ENREF_1) by 4 fold |
| **75** | IkBa:RelA:p52 IkBa | | 6.00E-05 | constitutive degradation of NFkB within NFkB:IkB complex | min-1 | | cytoplasm & nucleus | | | assumed to be similar to that of RelA:p50 dimer (71). |
| **76** | IkBb:RelA:p52 IkBb | | 6.00E-05 | constitutive degradation of  NFkB within NFkB:IkB complex | min-1 | | cytoplasm & nucleus | | | assumed to be similar to that of RelA:p50 dimer (72). |
| **77** | IkBe:RelA:p52 IkBe | | 6.00E-05 | constitutive degradation of  NFkB within NFkB:IkB complex | min-1 | | cytoplasm & nucleus | | | assumed to be similar to that of RelA:p50 dimer (73). |
| **78** | IkBd:RelA:p52 IkBd | | 6.00E-05 | constitutive degradation of  NFkB within NFkB:IkB complex | min-1 | | cytoplasm & nucleus | | | assumed to be similar to that of RelA:p50 dimer (74). |
| **79** | NEMO-IKK+  IkBa:RelA:p50  RelA:p50 | | 1.95E-03 | NEMO mediated degradation of IkB  in composite species | nM-1  min-1 | | cytoplasm | | | refined the published parameter value[1](#_ENREF_1) with a 1.4 fold increase based on experimental measurements (appendix figure 3B) |
| **80** | NEMO-IKK+  IkBb:RelA:p50  RelA:p50 | | 5.00E-04 | NEMO mediated degradation of IkB  in composite species | nM-1  min-1 | | cytoplasm | | | similarly refined the published parameter value[1](#_ENREF_1) with a 1.1 fold increase for fitting |
| **81** | NEMO-IKK+  IkBe:RelA:p50  RelA:p50 | | 5.00E-04 | NEMO mediated degradation of IkB  in composite species | nM-1  min-1 | | cytoplasm | | | similarly refined the published parameter value[1](#_ENREF_1) with a 1.8 fold decrease for fitting |
| **82** | NEMO-IKK+  IkBa:RelA:p52  RelA:p52 | | 1.95E-03 | NEMO mediated degradation of IkB  in composite species | nM-1  min-1 | | cytoplasm | | | assumed to be similar to that of RelA:p50 dimer (79) based on experimental data (appendix figure 4A). |
| **83** | NEMO-IKK+  IkBb:RelA:p52  RelA:p52 | | 5.00E-04 | NEMO mediated degradation of IkB  in composite species | nM-1  min-1 | | cytoplasm | | | similarly assumed to be similar to that of RelA:p50 dimer (80). |
| **84** | NEMO-IKK+  IkBe:RelA:p52  RelA:p52 | | 5.00E-04 | NEMO mediated degradation of IkB  in composite species | nM-1  min-1 | | cytoplasm | | | similarly assumed to be similar to that of RelA:p50 dimer (81). |
| **85** | NIK-IKK1 +IkBd:RelA:p50 RelA:p50 | | 1.00E-03 | NIK mediated degradation of IkB in composite species | nM-1  min-1 | | cytoplasm | | | refined the published parameter value[2](#_ENREF_2) with a 1.2 fold decrease based on experimental measurements (appendix figure 3C) suggesting similar degradation of bound and free IB. |
| **86** | NIK-IKK1 +IkBd:RelA:p52   RelA:p52 | | 1.00E-03 | NIK mediated degradation of IkB  in composite species | nM-1  min-1 | | cytoplasm | | | assumed to be similar to that of RelA:p50 dimer (85). |
| **87** | IkBa:RelA:p50   IkBa:RelA:p50n | | 2.70E-01 | nuclear import of composite species | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **88** | IkBb:RelA:p50   IkBb:RelA:p50n | | 2.70E-02 | nuclear import of composite species | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **89** | IkBe:RelA:p50   IkBe:RelA:p50n | | 1.30E-01 | nuclear import of composite species | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **90** | IkBd:RelA:p50   IkBd:RelA:p50n | | 2.70E-01 | nuclear import of composite species | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **91** | IkBa:RelA:p52   IkBa:RelA:p52n | | 2.70E-01 | nuclear import of composite species | min-1 | | \_\_\_ | | | assumed to be similar to that of RelA:p50 dimer (87). Note, nuclear import of NF-B:IB complexes are determined by the nuclear localization signal present in RelA. |
| **92** | IkBb:RelA:p52   IkBb:RelA:p52n | | 2.70E-02 | nuclear import of composite species | min-1 | | \_\_\_ | | | similarly assumed to be similar to that of RelA:p50 dimer (88). |
| **93** | IkBe:RelA:p52   IkBe:RelA:p52n | | 1.30E-01 | nuclear import of composite species | min-1 | | \_\_\_ | | | similarly assumed to be similar to that of RelA:p50 dimer (89). |
| **94** | IkBd:RelA:p52   IkBd:RelA:p52n | | 2.70E-01 | nuclear import of composite species | min-1 | | \_\_\_ | | | similarly assumed to be similar to that of RelA:p50 dimer (90). |
| **95** | IkBa:RelA:p50n   IkBa:RelA:p50 | | 8.30E-01 | nuclear export of composite species | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **96** | IkBb:RelA:p50n   IkBb:RelA:p50 | | 4.10E-01 | nuclear export of composite species | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **97** | IkBe:RelA:p50n   IkBe:RelA:p50 | | 4.10E-01 | nuclear export of composite species | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **98** | IkBd:RelA:p50n   IkBd:RelA:p50 | | 4.10E-01 | nuclear export of composite species | min-1 | | \_\_\_ | | | identical as in[2](#_ENREF_2) |
| **99** | IkBa:RelA:p52n   IkBa:RelA:p52 | | 8.30E-01 | nuclear export of composite species | min-1 | | \_\_\_ | | | assumed to be similar to that of RelA:p50 dimer (95). Note, nuclear exports of NF-B:IB complexes are largely controlled through IB-derived nuclear export signal. |
| **100** | IkBb:RelA:p52n   IkBb:RelA:p52 | | 4.10E-01 | nuclear export of composite species | min-1 | | \_\_\_ | | | similarly assumed to be similar to that of RelA:p50 dimer (96). |
| **101** | IkBe:RelA:p52n  IkBe:RelA:p52 | | 4.10E-01 | nuclear export of composite species | min-1 | | \_\_\_ | | | similarly assumed to be similar to that of RelA:p50 dimer (97). |
| **102** | IkBd:RelA:p52n   IkB2:RelA:p52 | | 4.10E-01 | nuclear export of composite species | min-1 | | \_\_\_ | | | similarly assumed to be similar to that of RelA:p50 dimer (98). |
| **103** | p100+p100IkBd | | 8.10E-02 | p100 association | nM-1  min-1 | | cytoplasm | | | association/dissociation rates were kept similar to that of NFB-IB association/dissociation rates, those captured the experimentally observed 3-5 fold induction of RelA/NFB during LTR signaling (Figure 1 - figure supplement 1). |
| **104** | IkBdp100+p100 | | 1.20E-05 | IkBd dissociation min-1 | |  | cytoplasm | | same as 103 | | |
| **105** | | NIK-IKK1 +p100NFkB2 | 4.20E-03 | p100 processing nM1min1  through NIK | | cytoplasm | | fitted based on experimentally observed time kinetics of LTR stimulated NIK induced IB/p100 degradation (appendix figure 3C) and RelA/NFB activation (Figure 1 - figure supplement 1). | | | |

As such, out of the total 105-parameter values (Supplementary file-2), 34 were identical to those published in earlier model versions1,2. Moreover, 20 were derived from the published literature, but were subjected to a minor < 3 fold modification for adapting to the NFB Systems Model version 1.0. Another 4 parameters were modified < 5 fold for fitting. For additional 12 parameters, further experimental evidences were provided to justify the alterations. Furthermore, another 27 parameters related to the newly described RelA:p52 dimer (Supplementary file-2 and Supplementary file-3) were assumed to be identical to those of RelA:p50 dimer and the assumption was justified using our own experimental measurements and literature. An exception was being made for the association rates underlying RelA:p52-IB complex formation (a total of 8 parameters) basing on our experimental analyses.

**Related References:**

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