

Table S1. Model parameter values

	Parameter Description	Model Value**	Ref. Value	Ref.
a_y	I κ B α constitutive synthesis*	0.00185 nM/min	0.0185 nM/min	(Kearns <i>et al</i> , 2006)
b_y	I κ B α inducible synthesis*	5.0 nM/min	138.6 nM/min	(Kearns <i>et al</i> , 2006)
d_y	I κ B α promoter: number κ B sites	1.0		
f_0	NF- κ B binding I κ B promoter	10.0 /(nMmin)		
f_1	NF- κ B unbinding I κ B promoter	200.0/min		
τ_y	Delay in I κ B α synthesis	25.0 min	25.8 min	this work
k_y	I κ B α binding with NF- κ B	0.1 /(nMmin)	0.03 /(nMmin)	(Kearns <i>et al</i> , 2006)
k_{-y}	I κ B α dissociates from NF- κ B	0.0006/min	0.00006/min	(Kearns <i>et al</i> , 2006)
X	Total NF- κ B	100 nM	100 nM	(Hoffmann <i>et al</i> , 2002)
g_y	Constitutive I κ B α degradation	0.012/min	0.12/min	(Kearns <i>et al</i> , 2006)
r_y	Degradation of I κ B α by IKK	0.01/min	0.018/min	(Kearns <i>et al</i> , 2006)
a_z	I κ B ϵ constitutive synthesis*	0.00046 nM/min	0.0046 nM/min	(Kearns <i>et al</i> , 2006)
b_z	I κ B ϵ inducible synthesis*	5.0 nM/min	18.0 nM/min	(Kearns <i>et al</i> , 2006)
d_z	I κ B ϵ promoter: number κ B sites	1.0		
τ_z	Delay in I κ B ϵ synthesis	72.0 min	59.4 min	this work
k_z	I κ B ϵ binding with NF- κ B	0.1 /(nMmin)	0.03 /(nMmin)	(Kearns <i>et al</i> , 2006)
k_{-z}	I κ B ϵ dissociates from NF- κ B	0.0006/min	0.00006/min	(Kearns <i>et al</i> , 2006)
g_z	Constitutive I κ B ϵ degradation	0.018/min	0.18/min	(Kearns <i>et al</i> , 2006)
r_z	Degradation of I κ B ϵ by IKK	0.01/min	0.018/min	(Kearns <i>et al</i> , 2006)

*per 1 κ B site

***1 nM = 1000 molecules for a cell volume that is on the order of 1 pico liter