

## SUPPLEMENTARY INFORMATION

**Supplementary Table 1:** PRCC values for the LHS sensitivity analysis of the effect of cellular/tissue scale and TNF-associated molecular scale parameters on model outcomes during treatment with etanercept at a permeability coefficient of  $k_c = 1.1 \times 10^{-7}$  cm/s (Only parameters with significant PRCC values are indicated).

Model parameters	Selected model outputs			
	Total number of bacteria	Average sTNF concentration	Granuloma size	Caseation
$\delta_{chem}$	+0.37	+0.35	+0.33	+0.33
$T_{moveM}$	-0.49	-0.50	-0.45	-0.37
$\tau_{recTgam}$	+0.44	+0.23		
$T_{recr}$				-0.29
$\alpha_{Bi}$	+0.23	+0.24	+0.27	+0.57
$\delta_{TNF}$				
$k_{synthMac}$	-0.51	-0.33	-0.39	
$k_{synthTcell}$			+0.27	
$k_{TACEMac}$				
$K_{dl}$		+0.30	+0.25	
$k_{apop}$				
$k_{NF-\kappa B}$	-0.32	-0.31	-0.29	-0.34
$\tau_{NF-\kappa B}$	+0.27	+0.21		+0.22

**Supplementary Table 2:** PRCC values for the LHS sensitivity analysis of the effect of cellular/tissue scale and TNF-associated molecular scale parameters on model outcomes during treatment with infliximab at a permeability coefficient of  $k_c = 1.1 \times 10^{-7}$  cm/s (Only parameters with significant PRCC values are indicated).

Model parameters	Selected model outputs			
	Total number of bacteria	Average sTNF concentration	Granuloma size	Caseation
$\delta_{chem}$	+0.34	+0.32	+0.32	+0.22
$T_{moveM}$	-0.36	-0.39	-0.37	+0.24
$\tau_{recTgam}$	+0.26	+0.27	+0.28	
$T_{recr}$				
$\alpha_{Bi}$	+0.39	+0.36	+0.42	+0.55
$\delta_{TNF}$				
$k_{synthMac}$	-0.49		-0.39	-0.37
$k_{synthTcell}$				
$k_{TACEMac}$	+0.24	+0.44	+0.32	+0.29
$K_{dl}$		+0.24		
$k_{apop}$	-0.27	-0.25	-0.24	-0.23
$k_{NF-\kappa B}$	-0.19			
$\tau_{NF-\kappa B}$				