Supplementary Table S2: Molecular/single-cell scale TNF/TNFR parameters, definitions and values estimated from literature

Parameter	Parameter description	Value*	Reference
$k_{synthMac}$ (#/cell.s)	Full synthesis rate of mTNF for macrophages	10^{-1}-1 (0.21)	(1)
$k_{synthTcell}$ (#/cell.s)	Full synthesis rate of mTNF for T cells	10^{-2}-10^{-1} (0.021)	(2)
$TNFR1_{mac}$ (#/cell)	TNFR1 density on the surface of macrophages	500-5000 (1100-1900) †	(1, 3-5)
$TNFR1_{Tcell}$ (#/cell)	TNFR1 density on the surface of T cells	500-5000 (400-1200) †	(1, 3-5)
$TNFR2_{mac}$ (#/cell)	TNFR2 density on the surface of macrophages	500-5000 (400-800) †	(1, 3-5)
$TNFR2_{Tcell}$ (#/cell)	TNFR2 density on the surface of T cells	500-5000 (600-800) †	(1, 3-5)
D_1 (cm^2/s) ‡	Diffusion coefficient of sTNF	10^{-8}-10^{-7} (5.2×10^{-8})	(6, 7)
D_2 (cm^2/s) ‡	Diffusion coefficient of shed TNF/TNFR2 complex	10^{-8}-10^{-7} (3.2×10^{-8})	(6, 7)
k_{TACE_Mac} (s^{-1})	Rate constant for TNF release by TACE activity on a macrophage	10^{-4}-10^{-3} (4.4×10^{-4})	(1, 8-10)
k_{TACE_Tcell} (s^{-1})	Rate constant for TNF release by TACE activity on a T cell	10^{-5}-10^{-4} (4.4×10^{-5})	
δ_{TNF} (s^{-1})	sTNF degradation rate constant	10^{-4}-10^{-3} (4.58×10^{-4})	(11)
K_{d1} (M)	Equilibrium dissociation constant of sTNF/TNFR1	10^{-12}-10^{-10} (1.9×10^{-11})	(3, 12)
K_{d2} (M)	Equilibrium dissociation constant of sTNF/TNFR2	10^{-10}-10^{-9} (4.2×10^{-10})	(3, 12, 13)
k_{on1} ($M^{-1}s^{-1}$)	sTNF/TNFR1 association rate constant	10^7-10^8 (2.8×10^7)	(12)
k_{on2} ($M^{-1}s^{-1}$)	sTNF/TNFR2 association rate constant	10^7-10^8 (3.5×10^7)	(12)
k_{off1} (s^{-1})	sTNF/TNFR1 dissociation rate constant	$k_{on1}\times K_{d1}$	
k_{off2} (s^{-1})	sTNF/TNFR2 dissociation rate constant	$k_{on2}\times K_{d2}$	
k_{int1} (s^{-1})	TNFR1 internalization rate constant	1.5×10^{-4}-1.5×10^{-3} (7.7×10^{-4})	(12, 14)
k_{int2} (s^{-1})	TNFR2 internalization rate constant	3.9×10^{-4}-5×10^{-4} (4.6×10^{-4})	(13)
k_{shed} (s^{-1})	TNFR2 shedding rate constant	3.9×10^{-4}-1.5×10^{-3} (5×10^{-4})	(9, 14)
k_{rec1} (s^{-1})	TNFR1 recycling rate constant	8.8×10^{-5}-5.5×10^{-4} (1.8×10^{-5})	(15, 16)
k_{rec2} (s^{-1})	TNFR2 recycling rate constant	8.8×10^{-5}-5.5×10^{-4} (1.8×10^{-5})	(15, 16)
k_{t1} (s^{-1})	TNFR1 turn-over rate constant	3×10^{-4}-5×10^{-4} (3.8×10^{-4})	(15, 16)
k_{t2} (s^{-1})	TNFR2 turn-over rate constant	3×10^{-4}-5×10^{-4} (3.8×10^{-4})	(15, 16)
k_{deg1} (s^{-1})	TNFR1 degradation rate constant	10^{-5}-10^{-4} (5×10^{-5})	(3, 15-17)
k_{deg2} (s^{-1})	TNFR2 degradation rate constant	10^{-5}-10^{-4} (5×10^{-5})	(3, 15-17)
V_{r1_mac} (#/cell.s)	Cell surface TNFR1 synthesis rate constant for macrophages	$k_{t1}\times TNFR1_{mac}$	
V_{r1_Tcell} (#/cell.s)	Cell surface TNFR1 synthesis rate constant for T cells	$k_{t1}\times TNFR1_{Tcell}$	
V_{r2_mac} (#/cell.s)	Cell surface TNFR2 synthesis rate constant for macrophages	$k_{t2}\times TNF21_{mac}$	
V_{r2_Tcell} (#/cell.s)	Cell surface TNFR2 synthesis rate constant for T cells	$k_{t2}\times TNF21_{Tcell}$	

* Ranges of parameter values used for sensitivity analysis are indicated out of parentheses. Values in parentheses are used to generate baseline model results.

† Baseline model values for TNFR densities on each recruited individual cell was randomly chosen from the range shown in parentheses.

‡ Diffusion coefficients of the soluble species in granuloma were estimated in line with estimates for diffusible factors of similar molecular weight in tumors (6, 7).

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