

Table 1: **Table of default simulation parameters**

Parameter	Description	Value
$\alpha$	Protrusion coefficient	0.4 pN / $\mu m^3$
$\beta$	Retraction coefficient	0.2 pN / $\mu m$
$\gamma$	Cell tension coefficient	1.8 pN
$\kappa$	Cell bending coefficient	5 pN $\mu m^2$
$g$	Cell-cell body repulsion coefficient	1 pN/ $\mu m$
$R_{\text{cell}}$	Initial radius of cell	9 $\mu m$
$\tau$	Friction coefficient	2.62 pN s / $\mu m^2$
$\epsilon$	Phase field width	2 $\mu m$
$k_a$	Unitless base activation rate	0.01
$k_b$	Overall activation rate	10 $s^{-1}$
$k_c$	Deactivation rate	10 $s^{-1}$
$K_a$	Positive feedback threshold for actin promoter (Rho GTPase) concentration	1 $\mu m^{-2}$
$D_\rho$	Actin promoter (Rho GTPase) diffusion coefficient	0.8 $\mu m^2/s$
$N_{\text{tot}}$	Total amount of actin promoter (unitless)	800
$D_I$	Inhibitor diffusion coefficient	0.5 $\mu m^2/s$
$k_{-I}$	Degradation rate of $I$	0.2 $s^{-1}$
$\rho^{char}$	characteristic scale of $\rho$	1 $\mu m^{-2}$
$\eta$	Noise intensity	0.02 $\mu m/s$
$d$	Stripe width	26 $\mu m$
$\Delta t$	Numerical time step	0.004 $s$

These parameters are used throughout the paper; any deviation from them is explicitly noted.