

Table S1 Parameters used in simulations

Variable name	Description	Value	Source
ρ	Cell density	$0.3 / \mu\text{m}^2$	The cell density is corresponding to one layer of densely packed cells
δt	Simulation time-step	5 s	
w	Cell width	$0.5 \mu\text{m}$	From observation of individual cells
L	Cell length	$7 \mu\text{m}$	From observation of individual cells
v	Agent velocity	$6 \mu\text{m}/\text{min}$	Average cell velocity observed in experiments
D	Spatial diffusion coefficient	$0.1 \mu\text{m}^2/\text{s}$	Obtained by matching instant cell velocity distributions in ABM simulations and experimental data analysis
T	Natural reversal period of agents	8 min	Average cell reversal period observed in experiments of non-rippling cells
D_φ	Phase diffusion coefficient	$10^{-4} \text{rad}^2/\text{s}$	Obtained by matching reversal period distributions in ABM simulations and experimental data analysis
T_0	Refractory time	2.6 min	Obtained by matching the average reversal period in ABM simulations and experimental observations of ripping cells.
$\Delta\theta_0$	Angle difference threshold for contact detection	0.0833π	
τ_θ	Angular correlation time	50 s	Adapted from the work of Sliusarenko et al.[19]
D_θ	Angle diffusion coefficient	$10^{-4} \text{rad}^2/\text{s}$	Adapted from the work of Sliusarenko et al. [19]
p_0	Signal probability per time-step (“on prey”)	0.1	Toned to match the experimental observed pattern
p_0	Signal probability per time-step (“off prey”)	0.03	Chosen below the ripple-inducing threshold (Figure S3)