SUPPLEMENTARY MATERIAL for:

Modelling active cell movement with the Potts model

Nara Guisoni,[1] Karina I. Mazzitello,[2] and Luis Diambra[3]

[1] *INIFTA, Universidad Nacional de La Plata - CONICET*

[2] *Instituto de Investigaciones Científicas y Tecnológicas en Electrónica, Universidad Nacional de Mar del Plata - CONICET*

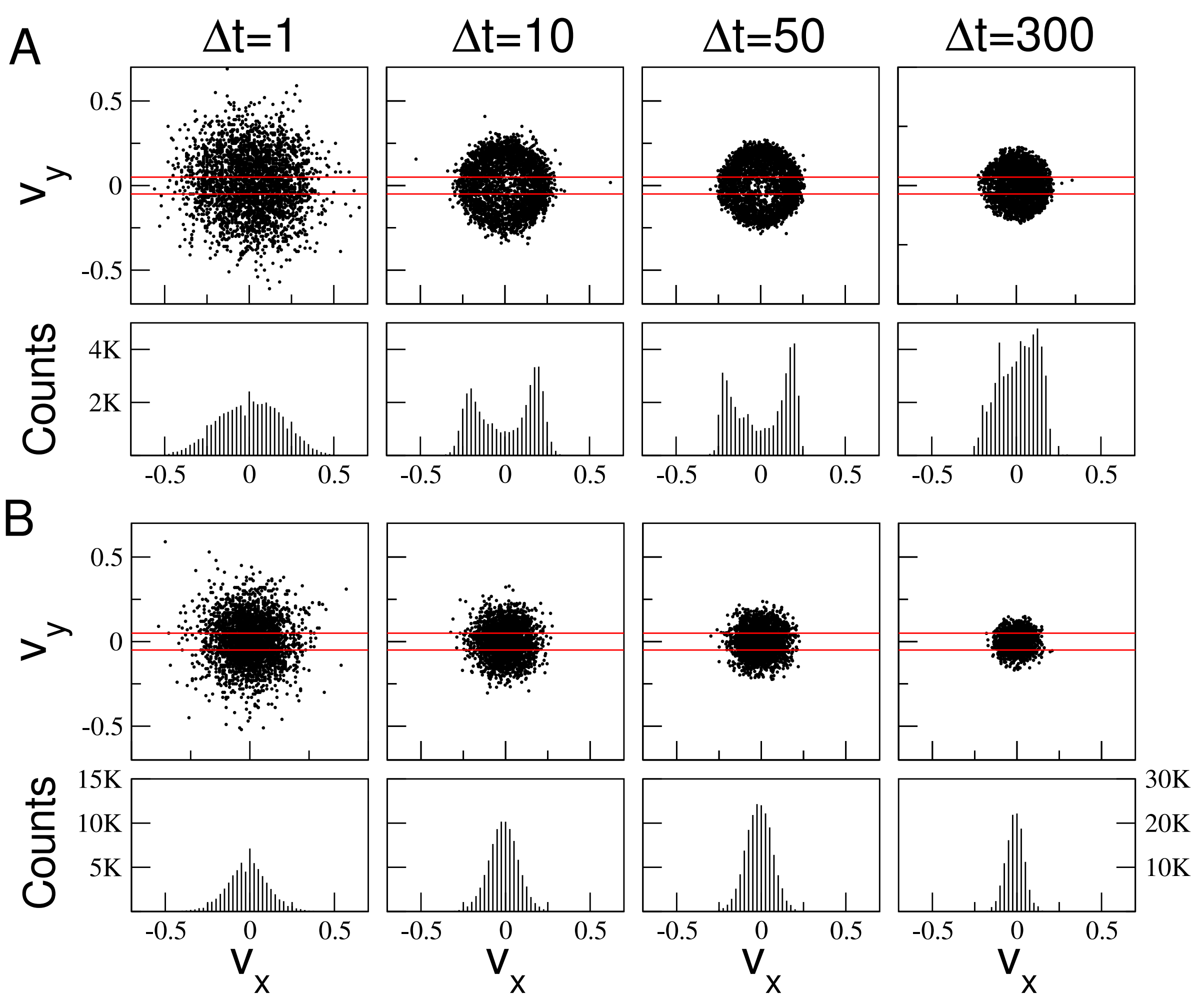
[3] *Centro Regional de Estudios Genómicos, Universidad Nacional de La Plata - CONICET.*

MOVIES LEGENDS

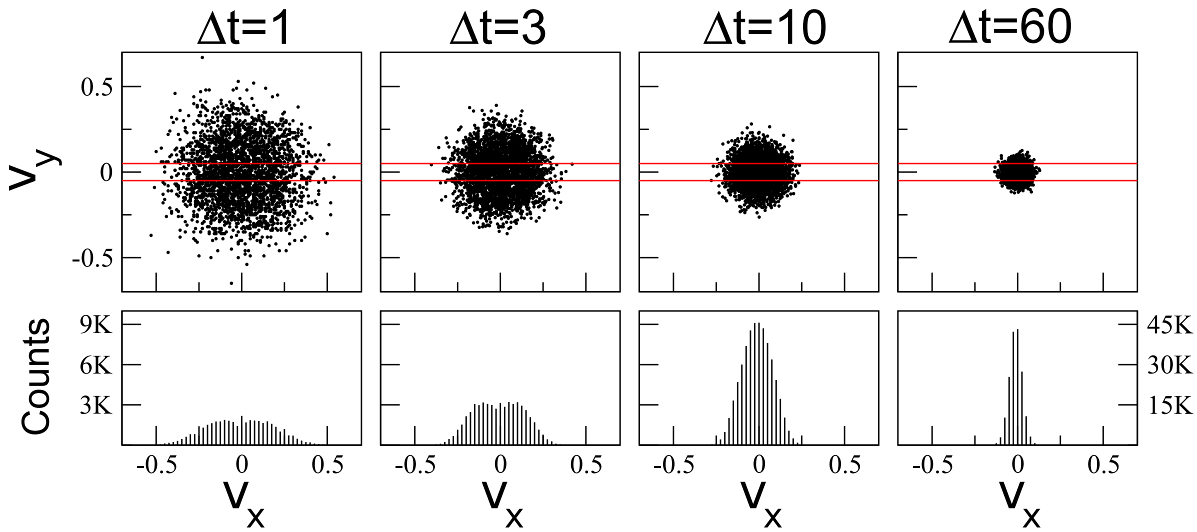
Supp. movie 1: Animated movie of *in-silico* cells in a low density culture medium. The driving force angle Θ is updated according to Eq. (3). Parameters used: $\rho = 0.2$, $\tau = 10$ MCS and $\phi = 0.95$. Simulation carried on a lattice of 256×256 sites during 10000 MCS and snapshots are taken each 10 MCS.

Supp. movie 2: Animated movie of *in-silico* cells in a high density culture medium. The driving force angle Θ is updated according to Eq. (3). Parameters used: $\rho = 0.9$, $\tau = 10$ MCS and $\phi = 0.95$. Simulation carried on a lattice of 256×256 sites during 10000 MCS and snapshots are taken each 10 MCS.

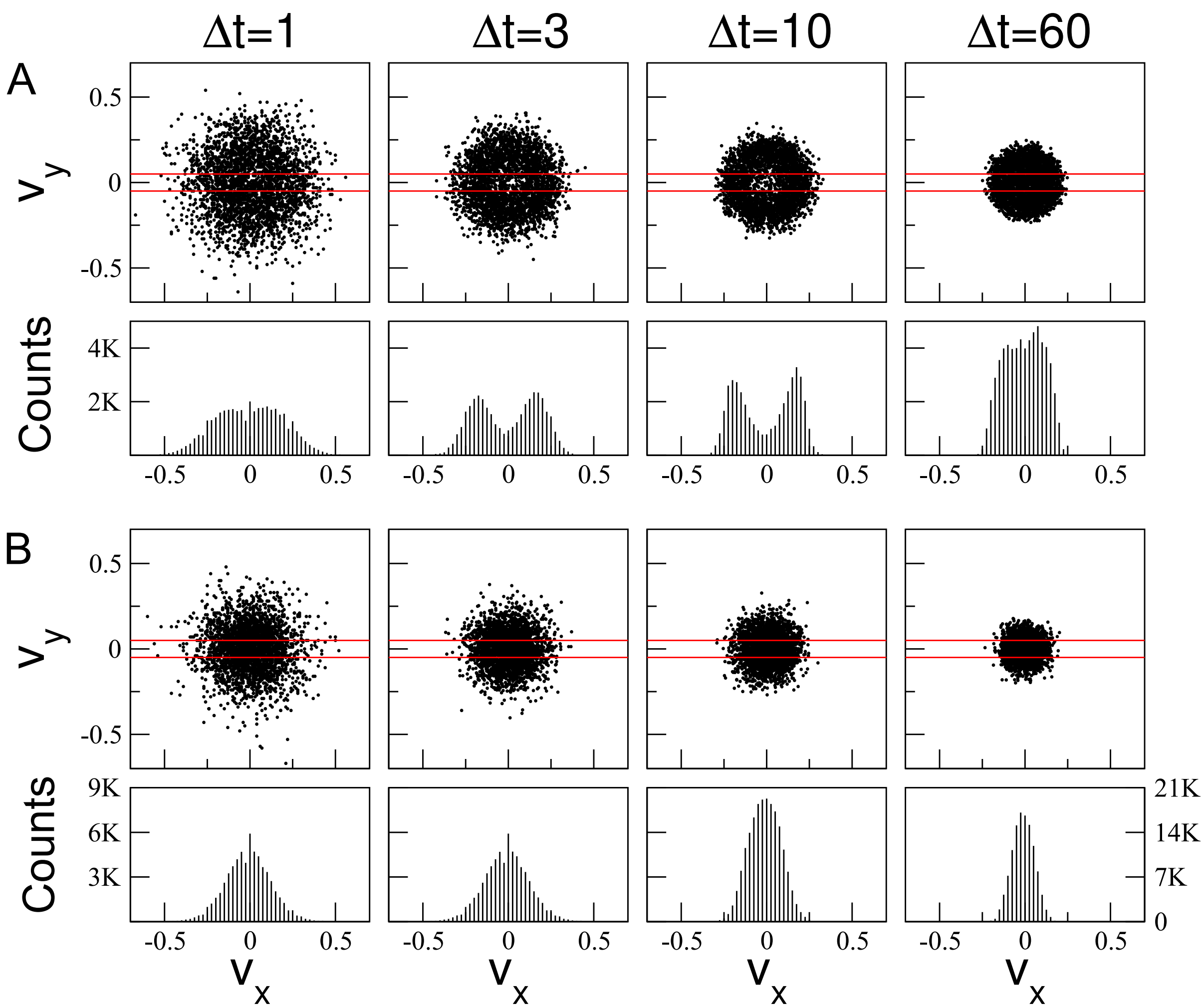
SUPPLEMENTARY FIGURES



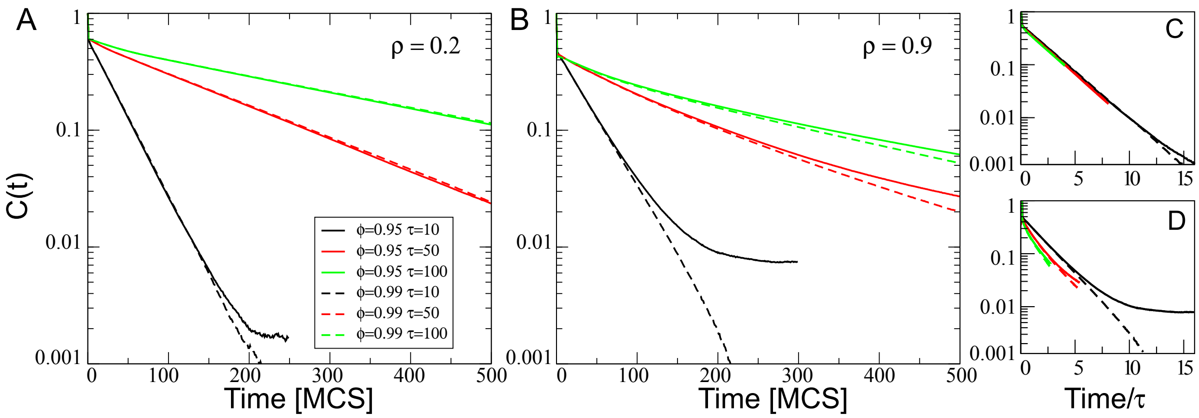
Supp. Fig. 1. Cell velocities v_x vs v_y calculated for different values of the time interval Δt (upper panels). Histogram of the cell velocity component v_x computed over the v_y window indicated by red bars (lower panels). Two different values of densities were used: $\rho = 0.2$ (A) and $\rho = 0.9$ (B). Parameters used: $\tau = 50$ MCS and $\phi = 0.95$.



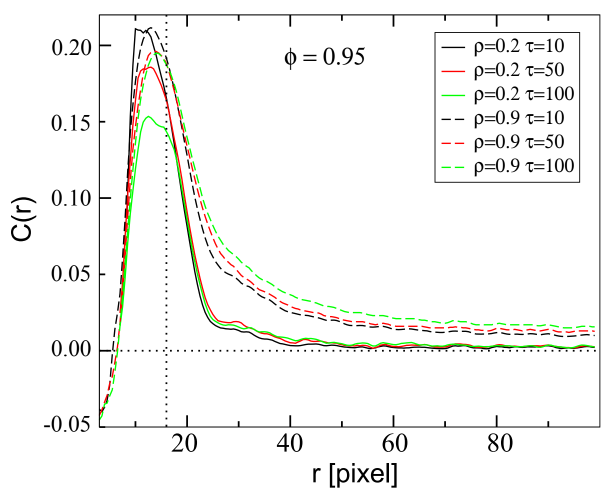
Supp. Fig. 2. Cell velocities v_x vs v_y calculated for different values of the time interval Δt (upper panels). Histogram of the cell velocity component v_x computed over the v_y window indicated by red bars (lower panels). Parameters used: $\rho = 0.2$, $\tau = 1$ MCS and $\phi = 0.95$.



Supp. Fig. 3. Cell velocities v_x vs v_y calculated for different values of the time interval Δt (upper panels). Histogram of the cell velocity component v_x computed over the v_y window indicated by red bars (lower panels). Two different values of densities were used: $\rho = 0.2$ (A) and $\rho = 0.9$ (B). Parameters used: $\tau = 10$ MCS and $\phi = 0.99$.



Supp. Fig. 4. Semi-log plot of $C(t)$ as obtained by using Eq. (5) for the actualization of the angle of the driving force Θ, and averaged over all cells in the simulation. The plots correspond to three different values of τ, two values of ϕ (0.95 solid lines and 0.99 dashed lines) and for two different densities: $\rho = 0.2$ (A) and $\rho = 0.9$ (B). Panels (C) and (D) show the collapse of the curves by rescaling the horizontal axes by τ, for the simulations at low and high density, respectively. $\Delta\Theta = \pi/3$.



Supp. Fig. 5. $C(r)$ as obtained by using Eq. (5) for the actualization of the angle of the driving force Θ, for $\rho = 0.2$ and 0.9 (continuous and dashed lines, respectively), and different values of τ, as indicated. The vertical dashed line represents the average cell diameter equal to 16 μm as discussed in Section II B. Data were obtained by averaging between 0 and 4000 MCS and over 50 and 10 samples, for $\rho = 0.2$ and 0.9, respectively. Parameters used: $\phi = 0.95$ and $\Delta\Theta = \pi/3$.