(a) Choose an interaction mechanism

A ⇄ Rac Rac ⇄ A

s_{cc}

B ⇄ Rho Rho ⇄ B

Intercellular region: $s_{cc} = 1/4 \int ds$

(b) Perform stochastic simulations
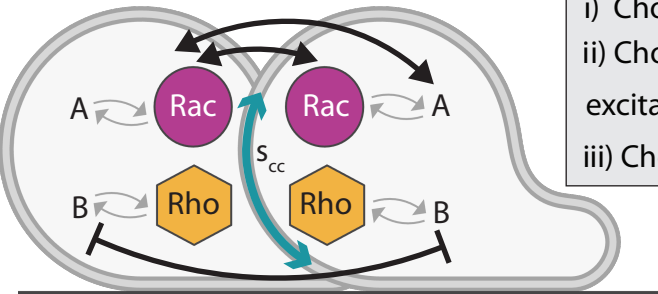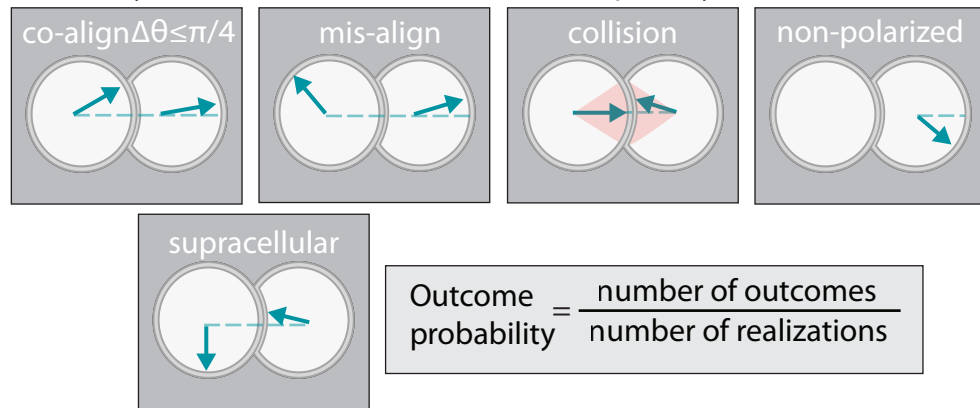
i) Choose a intercellular interaction
ii) Choose an inhibitory (⊣) or
excitatory (→) effect of the interaction
iii) Choose an amplification factor

(c) Identify polarity axis of each cell

x100 →

Polarity axis

Branched F-actin concentration

θ

Cell 1   Cell 2

$θ_1$ $θ_2$

Location along cell membrane

Non-polarized threshold, C_{crit}
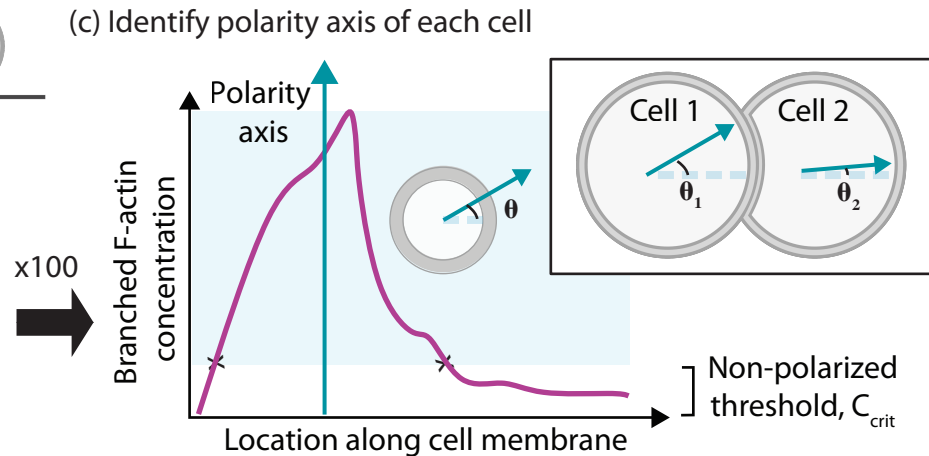
(d) Classify outcomes based on orientation of polarity axes

co-align $Δθ ≤ π/4$ mis-align   collision   non-polarized

supracellular

$$\text{Outcome probability} = \frac{\text{number of outcomes}}{\text{number of realizations}}$$

(e)

	Single cell	Doublet
Spontaneous	92%	24.5%
Ext. stimulus	97%	27.5%