

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: Simulation of cell that immediately polarizes. ($\alpha = 2.4 \mu\text{m}^5 \text{s}^{-1}$, $G = 0.020 \text{mg}\mu\text{m}^{-1} \text{s}^{-2}$, $s = 1.0 \mu\text{m}^4 \text{s}^{-1}$, $h = 0.5 \mu\text{m}$).

File Name: Supplementary Movie 2

Description: Simulation of cell with one rotating wave. ($\alpha = 2.8 \mu\text{m}^5 \text{s}^{-1}$, $G = 0.065 \text{mg}\mu\text{m}^{-1} \text{s}^{-2}$, $s = 0.8 \mu\text{m}^4 \text{s}^{-1}$, $h = 0.5 \mu\text{m}$).

File Name: Supplementary Movie 3

Description: Simulation of cell with two waves rotating in the same direction. ($\alpha = 2.4 \mu\text{m}^5 \text{s}^{-1}$, $G = 0.050 \text{mg}\mu\text{m}^{-1} \text{s}^{-2}$, $s = 1.0 \mu\text{m}^4 \text{s}^{-1}$, $h = 0.5 \mu\text{m}$).

File Name: Supplementary Movie 4

Description: Simulation of cell with two waves rotating in opposite directions. ($\alpha = 3.2 \mu\text{m}^5 \text{s}^{-1}$, $G = 0.030 \text{mg}\mu\text{m}^{-1} \text{s}^{-2}$, $s = 1.0 \mu\text{m}^4 \text{s}^{-1}$, $h = 0.5 \mu\text{m}$).

File Name: Supplementary Movie 5

Description: Simulation of cell with multiple rotating waves. ($\alpha = 2.5 \mu\text{m}^5 \text{s}^{-1}$, $G = 0.040 \text{mg}\mu\text{m}^{-1} \text{s}^{-2}$, $s = 1.0 \mu\text{m}^4 \text{s}^{-1}$, $h = 0.5 \mu\text{m}$).

File Name: Supplementary Movie 6

Description: Simulation of cell with multiple rotating waves. ($\alpha = 2.5 \mu\text{m}^5 \text{s}^{-1}$, $G = 0.040 \text{mg}\mu\text{m}^{-1} \text{s}^{-2}$, $s = 0.6 \mu\text{m}^4 \text{s}^{-1}$, $h = 0.5 \mu\text{m}$).

File Name: Supplementary Movie 7

Description: Simulation of cell with amoeboid-like motility. ($\alpha = 2.2 \mu\text{m}^5 \text{s}^{-1}$, $G = 0.050 \text{mg}\mu\text{m}^{-1} \text{s}^{-2}$, $s = 1.0 \mu\text{m}^4 \text{s}^{-1}$, $h = 0.5 \mu\text{m}$).

File Name: Supplementary Movie 8

Description: Simulation of the formation of rotating waves using the reduced asymptotic model, equation 3 in the main article