
Contact enhancement of locomotion in spreading cell colonies

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Résumé

The dispersal of cells from an initially constrained location is a crucial aspect of many physiological phenomena ranging from morphogenesis to tumour spreading. In such processes, cell-cell interactions may deeply alter the motion of single cells, and in turn the collective dynamics. While contact phenomena like contact inhibition of locomotion are known to come into play at high densities, here we focus on the little explored case of non-cohesive cells at moderate densities. We fully characterise the spreading of micro-patterned colonies of *Dictyostelium discoideum* cells from the complete set of individual trajectories. From data analysis and simulation of an elementary model, we demonstrate that contact interactions act to speed up the early population spreading by promoting individual cells to a state of higher persistence, which constitutes an as-yet unreported contact enhancement of locomotion. Our findings suggest that the current modelling paradigm of memoryless active particles may need to be extended to account for the history-dependent internal state of motile cells.

Mots-Clés: collective motion, cell migration, active matter model

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