

# Dynamics of Collective Cell Migration

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The process of collective cell migration is a complex process rich in many physical features. Understanding the process requires an understanding of the collective coordinated motion of the cells and active cellular motility forces. Many experiments have been done to understand collective migration, especially its physical aspects such as cell density variation, force distributions, velocity correlations etc. Collective cell movement arises in different biological processes such as wound healing, cancer growth to name a few. Our main focus is to study collective migration of cells in response to the wound healing process. It has been observed in experiments that the collectively moving front of cell tissue is generally unstable and shows fingerlike structure [1]. Our goal is to investigate the mechanistic description of the moving front

and study the complex dynamics through relevant mathematical model following Langevin dynamics [2]. We also study the cellular automaton model to explore the complex dynamics of collective cell migration. This is an attempt to understand the underlying principles of the active cell movement.

## References

- [1] M. Poujade et. al., Collective migration of an epithelial monolayer in response to a model wound, PNAS, 104 (2007).
- [2] T. Bameta et. al., Broad-tailed force distributions and velocity ordering in a heterogeneous membrane model for collective cell migration, EPL, vol. 99 p. 18004 (2012).

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