

# The Mechanics of Cell Motility

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## Abstract

Many living cells exhibit ability to move during several biological processes: embryogenesis and vasculogenesis and metastasis are relevant examples. The inner mechanism of locomotion has been investigated in a number of experimental studies, providing an impulse for a number of theoretical models that have been developed in recent years. A subject of special interest is the motion of fish keratocytes on a flat substrate, because these cells exhibit a distinct bistable behavior: a cell can be at rest or it can travel at a fixed size and speed, the transition from one state to the other being subject to a sufficiently large mechanical or chemotactical perturbation. On the basis of what is known about the internal machinery of locomotion (the “actomyosin treadmill”) I discuss some mathematical models that can explain the observed dynamics. Special emphasis is devoted to the balance of mass species in the cell as modulated by the active stress.

## References

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- [2] Recho P, Putelat T and Truskinovsky L, Contraction-Driven Cell Motility, *Phys Rev Lett*, 111:108102, 2013.