

The mechanics of cell migration

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Abstract

Cell migration is a very attractive mechanobiological system for mathematical modelling. The reason of such a fascination resides in the challenging contrast between the simplicity of the basic ingredients of the system (two phases that exchange mass), versus the rich observed dynamics: steady and pulsatile motion, excitability, polarization, material reorganization, transition between rest and excited states. In this talk I will provide examples of mathematical questions that stem when modelling a migrating cell as mechanical system, obeying balance laws. In some cases energetic arguments can support a purely mechanical explanation for the observed behavior.