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(I) Soft and alive: identifying the physics questions in the biology of living cells

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We really understand a phenomenon in science when we can use it to make something new. This interplay between fundamental science and new materials is particularly vibrant in the highly interrelated fields of biological physics and soft materials, where a confluence of experimental techniques and theoretical approaches meet to address fundamental questions. What is a gel? How do macromolecules, such as proteins and DNA, function in the crowded and confined environment of a cell? What role do motor-driven “active” processes play in transporting material in a cell? And what role do hydrodynamic interactions (the fluid-mediated interaction between macromolecules) play? I will try to paint a picture that motivates these questions.

Keyword-1

soft materials

Keyword-2

living cells

Keyword-3

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