

عنوان وبینار: Biomechanics can provide a new perspective on microbiology

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Biomechanics can provide a new perspective on microbiology

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Despite their tiny size, microorganisms play a huge role in many biological, medical, and engineering phenomena. Because of the considerable influence that microorganisms have on human life, the study of their behavior and function is important. In this talk, we first introduce some of our studies on the behavior of individual swimming microorganisms near surfaces. We show that cells can be trapped at liquid–air or liquid–solid interfaces. We then introduce interactions between a pair of swimming microorganisms, and show that our mathematical models can reproduce the interactions. Collective motions formed by a group of swimming microorganisms are also introduced. We then discuss how cellular-level phenomena can change the rheological and diffusion properties of a suspension. The macroscopic properties of a suspension are strongly affected by mesoscale flow structures, which in turn are strongly affected by the interactions between cells. Hence, a bottom-up strategy, i.e. from a cellular level to a continuum suspension level, represents a natural approach to the study of a suspension of swimming microorganisms.



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