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Animalcules Redux: The fantastic world of microswimmers

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Antony van Leeuwenhoek, the master microscopist, discovered many of the microorganisms that are now so familiar to us. His so-called “animalcules” such as bacteria and algae have been central to the study of problems in biological physics ranging from locomotion to evolution. Recent advances in microscopy, micromanipulation, high-speed imaging, and colloidal physics have led to renewed interest in natural, as well as synthetic, swimming microorganisms – microswimmers. In this talk I will give an overview of some fascinating recent developments, including collective behavior and anomalous transport in suspensions of swimmers, synchronization of flagella and colloidal oscillators, and light-driven multicellular locomotion (phototaxis).