David Weitz's group studies the physics of soft condensed matter, materials which are easily deformed by external stresses, electric, magnetic or gravitational fields, or even by thermal fluctuations. These materials typically possess structures which are much larger than atomic or molecular scales; the structure and dynamics at the mesoscopic scales determine macroscopic physical properties. The goal of this research is to probe and understand the relationship between mesoscopic structure and bulk properties. We study both synthetic and biological materials; our interests extend from fundamental physics to technological applications, from basic materials questions to specific biological problems. The techniques we use include video image analysis, light scattering, optical microscopy, rheology, and laser tweezing. We also develop new techniques to study these materials; we pioneered the use of multiple scattered waves to study dynamics and mechanical properties of materials, and applied these optical methods to measure the rheological properties of materials in what is now called microrheology.