



Force Measurement and Manipulation in Biological Microscopy

Learn the theory and techniques of measuring forces in biological samples

Sixth Offering May 18-21, 2010

Presented by

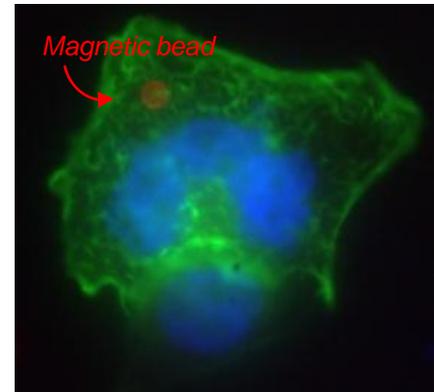
Computer Integrated Systems for Microscopy and Manipulation

An NIH NIBIB Biotechnology Resource Center

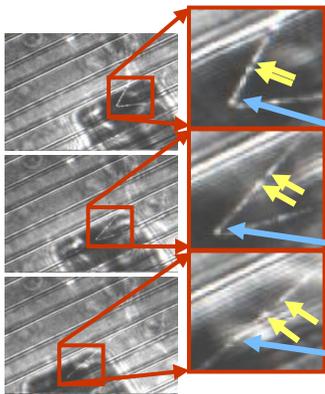
at The University of North Carolina at Chapel Hill

Course Content

- Theory and applications in force measurement of combined AFM-optical microscope, optical laser trap microscope, and UNC's 3D Force Microscope.
- Half of course will be spent with attendees using AFM, manipulation and 3D magnetic force systems on live biological samples.
- Overview of mechanisms of force generation in biology and consequences at molecular and cellular level.
- **KEYNOTE SPEAKER- Dennis Discher, U of Penn: "Cell Mechanics with AFM and other Small Tools"**



Magnetic bead (red) on epithelial cell with labeled cytoskeleton (green) and nucleus (blue)



Overlay of data from light microscope and AFM.

Quantum Dot labels on fibrin fibers move apart (yellow arrows) showing stretching of the fiber when manipulated with the AFM tip (position shown with blue arrows).

Who Should Come?

- Individuals with an undergraduate education in science and some experience with Biology.
- Graduate students in Biology or Physics, or industry personnel wanting to understand the forefront of force measurements.
- Researchers interested in the force-response of cells, biophysical fibers, cytoskeletal components, and single molecules, such as DNA.

Instructors: Professors Richard Superfine, Michael Falvo, Russell M. Taylor II, & Timothy O'Brien

Fee: \$775 (includes lab supplies, light breakfasts and snacks, and Keynote Dinner)

Location: Chapel Hill, NC (served by Raleigh-Durham Airport)

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Corporate Sponsors to date: Asylum Research

