



An informal workshop and discussion group for GEM<sup>4</sup> participants

## Nano- and Micro-Scale BioMechanics

Wednesday, October 12, 2005  
Ground Floor Conference Room (NE47-189)  
500 Technology Square (Building NE47), MIT, Cambridge  
Location: NE47-189: <http://whereis.mit.edu/map-jpg?mapterms=ne47>  
MIT Directions & Parking: <http://web.mit.edu/visit/get-around.html>

Workshop Leaders:

Professor Roger Kamm, Division of Biological Engineering, MIT ([rdkamm@mit.edu](mailto:rdkamm@mit.edu))  
Professor Matt Lang, Division of Biological Engineering, MIT ([mjlang@mit.edu](mailto:mjlang@mit.edu))  
Dr. Ming Dao, Dept of Materials Science and Engineering, MIT ([mingdao@mit.edu](mailto:mingdao@mit.edu))

## Agenda

### 8:15 – 8:45 AM: Registration, coffee, introductions

- 8:45 AM – R. D. Kamm et al., MIT, Mechanics of cellular response to deformation
- 9:00 AM – C. Ortiz and A. Grodzinsky, MIT, AFM studies of cartilage mechanics
- 9:15 AM – C.T. Lim, National University of Singapore, Experimental approaches to single cell and single molecule biomechanics
- 9:30 AM – K. Tan and M. Ragunath, National University of Singapore, Microbiological assessment of human red blood cells invaded by *P. falciparum* parasite
- 9:45 AM – A. Micoulet and J. Spatz, University of Heidelberg, Cell mechanics and metastatic invasions of tumor

**10:00 AM** – K. Turner, University of Wisconsin, Madison, and M. Puig-de-Morales, Harvard School of Public Health, Magnetic Twisting Cytometry  
Measurements of the Viscoelastic Properties of Red Blood Cells

**10:15 AM** – M. Diez, Institut Pasteur, Paris, and J. P. Mills, MIT, Specific molecular contributions to deformability of human red blood cells invaded by *P. falciparum* merozoites.

**10:30 – 10:45 AM: Coffee Break**

**10:45 – 11:15 AM: Laboratory tour – Tech 500 facilities**

J. P. Mills, A. Micoulet, Prof. M. Lang

**11:15 AM** – N. Wang, Harvard School of Public Health, Central Role of Prestress in Cytoskeletal Mechanics

**11:30 AM** – J. O. Dabiri, Caltech, Mechanics of biological propulsion.

**11:45 AM** – M. Lang et al., MIT, Combined optical trapping and single molecule fluorescence for general fluorophores

**12:00 PM** – K. Van Vliet et al., MIT, Mechanical mapping of cell-environment interactions

**12:15 PM – Conclusion**