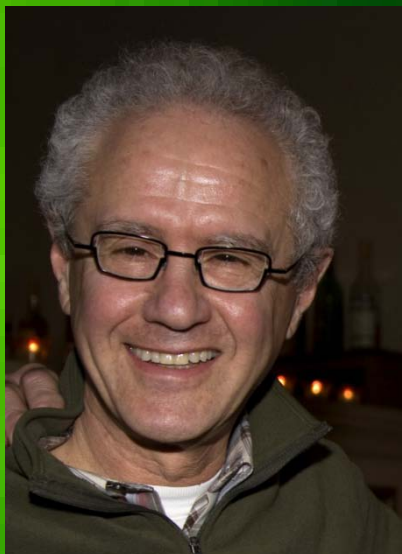
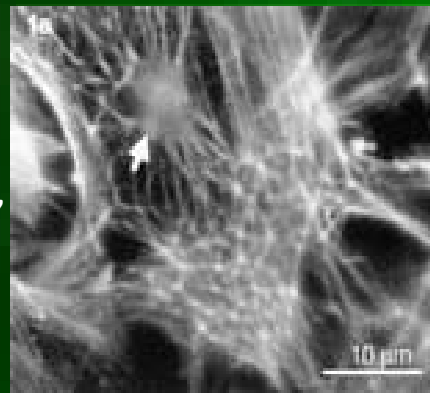




A Hard Day in the Life of a Soft Cell

With every beat of the heart, inflation of the lung, or peristalsis of the gut, cell types of diverse function are subjected to substantial stretch. But what physical laws govern the abilities of the cytoskeleton to deform, contract, and remodel at the nanoscale? New data support the idea that the cytoskeleton is at once a crowded chemical space and a fragile soft material in which the effects of biochemistry, molecular crowding, and physical forces are complex and inseparable, yet conspire nonetheless to yield remarkably simple phenomenological laws. These laws appear to be universal and thus comprise a striking intersection between the worlds of cell biology and soft matter physics.



Wednesday, April 22, 2009
4.00 PM
1000 Micro and Nanotechnology Laboratory
Reception to follow Seminar

Jeffrey J. Fredberg, Ph.D.

Professor of Bioengineering and Physiology
Molecular & Integrative Physiological Sciences
Harvard School of Public Health

Dr. Fredberg received his doctorate from MIT in 1973. He began his research career working on the subject of blood flow under the supervision of Dr. C. Forbes Dewey, III, in the Fluid Dynamics Laboratory at MIT, which was directed by Dr. Ascher Shapiro. Dr. Fredberg is principal investigator of two active research grants supported by the National Heart, Lung, and Blood Institute: a bioengineering research partnership (BRP) and an individual research grant (RO1). He has published over 170 papers in the peer-reviewed literature and holds 10 US patents. In recent years he served on the NIH Respiratory Sciences Study Section Boundary Team, the NSF/NIH Interagency Panel on Bridging the Life and Physical Sciences, and the NHLBI Working Group on Nanotechnology in Heart, Lung, Blood, and Sleep Medicine, and the Heart, Lung, and Blood Program Project Review Committee (study section HLBP) of the NHLBI.

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