CENTER FOR NANOSCALE SCIENCE AND TECHNOLOGY
Center for Intracellular Mechanics

Invitation to participate in workshops on Mechanobiology of Cell-
March 30, April 19, and May 12, 2006

There is increasing experimental evidence suggesting that extracellular and intracellular mechanical forces have a profound influence on a wide range of cell behavior such as growth, differentiation, apoptosis, gene expression, adhesion and signal transduction. Study of cell mechanics has drawn considerable attention from diverse fields, including biology, physics, biochemistry, and bioengineering. A deeper understanding of cell mechanics may have a revolutionary impact on biological and health sciences of the 21st century. Recent advancements in micro- and nanotechnology will catalyze this revolution through the unique capabilities of probing biological phenomena at a cellular and sub-cellular scale.

UIUC has a strong research reputation in the fields of mechanics, micro and nano technology, biophysics, bioengineering, molecular scale imaging, cell and molecular biology, and biochemistry. These strengths and expertise can be brought together under a center, titled **Center for Intracellular Mechanics**, that will catalyze research to address questions related to the mechanics of intracellular phenomena.

In order to start a campus wide dialogue towards forming the center, we would like to invite interested faculty to present your work to your colleagues. Possible themes are listed below, but they are not all inclusive.

Themes:
1. Cell mechanics
2. Cell adhesion and motility/locomotion
3. Cytoskeletal dynamics
4. Membrane biophysics
5. Intracellular transport
6. Mechanics and structures of organelles
7. Novel instrumentations for probing intracellular signals

Our meetings are scheduled for March 30, and April 19, 2006 from 3-5:30pm at 312 Engineering Hall; May 12 at 2271C VetMed. Please limit your talk to 10 mins. Refreshments will be provided.

Send your presentation title to isahmad@uiuc.edu .

Please feel free to forward this notice to colleagues, who may be interested in presenting.

Taher Saif; Convenor
Mechanical Engineering
Ph: 3-8552; saif@uiuc.edu

Irfan Ahmad; co-Convenor
Center for Nanoscale Science and Technology
Ph: 3-2015; isahmad@uiuc.edu

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List of Presentations for March 30, 2006 Workshop on Mechanobiology of Cell

Time	Presenter(s)	Title	Dept.	Email	Submitted
3:00	Adesida, I; Saif,T; and Ahmad, I	**Introductory Remarks**	CoE, MIE, CNST	saif@uiuc.edu; isahmad@uiuc.edu	03/21
3:10	Saif, Taher	Mechanical Behavior of Single Cells	MIE	saif@uiuc.edu	03/21
3:20	Boppart, Steve	Advanced Optical Imaging of Cell Dynamics and Responses to Mechanical Stimuli	ECE	boppart@uiuc.edu	03/21
3:30	Boppart; Marni	Alpha 7 Beta 1 Integrin Regulates Mechanotransduction and Prevents Skeletal Muscle Injury	Cell and Developmental Biology	boppartm@life.uiuc.edu	03/23
3:40	Chiba, Akira	Learning by Force?	Cell and Structural Bio	akira@uiuc.edu	3/21
3:50	Strano, Michael	Subcellular biomolecular detection using carbon nanotube near infrared optical probes: applications to intracellular signaling	ChBE	Strano@uiuc.edu	03/21
4:00	Ha, Taekjip	Calibration of in vivo FRET-force sensor	Physics	tjha@uiuc.edu	03/24
4:10	Wheeler, Matthew	Mechanical Considerations During Microfluidic Oocyte/Embryo Manipulation	Ani Sci	mbwheele@uiuc.edu	03/22
4:20	Ahmad, Irfan	NEMS-based Pathogenicity	CNST	isahmad@uiuc.edu	03/22
4:30		**Coffee Break**			
4:40	Wang, Yingxiao	Visualizing the Mechanotransduction Activities in Live Cells	BioE	yingxiao@uiuc.edu	03/23
4:50	Eurell, Tom	Tissue Engineering and Mechanobiology	VetMed	teurell@uiuc.edu	3/24
5:00	Wang, Ning	Stress distribution in the cytoplasm	MIE	nwangrw@uiuc.edu	03/24
5:10	Silvestre, Jonathan (Leckband)	Microfabricated platforms for investigations of cell adhesion in development and cancer	ChBE	leckband@uiuc.edu	03/23
5:20	Jensen, Tor Wolf	Patterned Agarose-Based Substrates for Cell Culture Ligand Presentation	IGB	torwolf@uiuc.edu	03/29
5:40	Bhalerao, Kaustubh	A systems-based framework to organize cell mechanobiology research for use in nanodevice design	ABE	bhalerao@uiuc.edu	03/28
5:50	Li, Fang (Leckband)	Multiscale description of cell adhesion	ChBE	leckband@uiuc.edu	03/23
6:00		**OPEN DISCUSSION**			
6:15		**ADJOURN**			

Our meeting is scheduled for March 30, 2006 from 3-6:00pm at 312 Engineering Hall.
Submit presentation titles to: Irfan Ahmad at: isahmad@uiuc.edu

CENTER FOR NANOSCALE SCIENCE AND TECHNOLOGY
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List of Presentations for April 19, 2006 Workshop on Mechanobiology of Cell

Time	Presenter(s)	Title	Dept.	Email	Submitted
3:00	Adesida, I; Saif, T; and Ahmad, I	**Introductory Remarks**	ECE, MIE, CNST	saif@uiuc.edu; isahmad@uiuc.edu	04/10
3:10	Cunningham, B	Label-Free Cancer Cell Apoptosis Screening Using Photonic Crystal Biosensors	ECE	bcunning@uiuc.edu	04/10
3:20	Kural, Comert (Selvin)	High Resolution Organelle Tracking For Studying Molecular Motors *In Vivo*	Physics	dr.kural@gmail.com selvin@uiuc.edu	04/10
3:30	Chaieb, Sahraoui	Modeling The Golgi Body and Towards the Control of Cell Metabolim	MIE	sch@uiuc.edu	04/11
3:40	Sumner, Rick (Rush Medical College)	Bone Regeneration, Cartilage Degeneration, Peripheral Nerve Regeneration	Anatomy & Cell Biology	Rick_Sumner@rush.edu	04/12
4:10		**Coffee Break**			
4:20	Aluru, Narayan	Transport through Biological and Synthetic ion channels	MIE	aluru@uiuc.edu	04/14
4:30	Leckband, Deborah	Multiscale Investigations of Cell Adhesion	ChBE	leckband@uiuc.edu	04/15
4:40	Wheeler, Bruce	Micropatterned Neuronal Networks in Culture	BioE	bwheeler@uiuc.edu	04/19
4:50		**Discussion on Thrusts and Potential Leads**			
5:15		**ADJOURN**			

Our meeting is scheduled for April 19, 2006 from 3:00-5:00pm at 312 Engineering Hall.
Submit presentation titles to: Irfan Ahmad at: isahmad@uiuc.edu

CENTER FOR NANOSCALE SCIENCE AND TECHNOLOGY
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List of Presentations for May 12, 2006 Workshop III on Mechanobiology of Cell at VetMed

Time	Presenter(s)	Title	Dept.	Email	Submitted
3:00	Adesida, I; Hahn, N; and Ahmad, I	**Introductory Remarks**	ECE, MIE, CNST	ned@uiuc.edu; isahmad@uiuc.edu	04/19
3:10	VetMed, MCB, ACES, etc.	Biological Questions			04/19
3:50	Johnson, A; Wang, X; Leckband, D; Saif, T; others	Engineering Tools and Techniques			04/19
4:10	Sobh, N	Computing Tools and Techniques	NCSA	sobh@uiuc.edu	04/21
4:15		**Coffee Break** **Discussion of Thrusts and Potential Leads**			
5:15		**ADJOURN**			

Our meeting is scheduled for May 12, 2006 from 3:00-5:00pm at the College of Veterinary Medicine

Submissions:
Biology titles to Ned Hahn, Associate Dean Research, VetMed: ned@uiuc.edu

Engineering titles to: Irfan Ahmad, Associate Director, Center for Nanoscale Science and Technology; and co-Convenor of MechanoBiology Workshops at: isahmad@uiuc.edu

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Incomplete List of Attendees: March 30, April 19, and May 12, 2006
Workshops on Mechanobiology of Cell at Engineering Hall, College of Engineering

Name	Research Interest(s)	Dept.	Email	Attended
Ahmad, I		CNST	isahmad@uiuc.edu	03/30;04/19
Saif, T		MIE	saif@uiuc.edu;	03/30;04/19
Cunningham, B		ECE	bcunning@uiuc.edu	04/19
Kural, Comert (Selvin)		Physics	dr.kural@gmail.com selvin@uiuc.edu	04/10
Chaieb, Sahraoui		MIE	sch@uiuc.edu	04/19
Sumner, Rick (Rush Medical College)		Anatomy & Cell Biology	Rick_Sumner@rush.edu	04/19
Aluru, Narayan		MIE	aluru@uiuc.edu	04/14
Leckband, Deborah		ChBE	leckband@uiuc.edu	04/15
Boppart, Steve		ECE	boppart@uiuc.edu	
Boppart; Marni		Cell and Developmental Biology	boppartm@life.uiuc.edu	
Chiba, Akira		Cell and Structural Bio	akira@uiuc.edu	
Strano, Michael		ChBE	Strano@uiuc.edu	
Ha, Taekjip		Physics	tjha@uiuc.edu	
Wheeler, Matthew		Ani Sci	mbwheele@uiuc.edu	
Ahmad, Irfan		CNST	isahmad@uiuc.edu	
Wang, Yingxiao		BioE	yingxiao@uiuc.edu	
Eurell, Tom		VetMed	teurell@uiuc.edu	
Wang, Ning		ME	nwangrw@uiuc.edu	
Silvestre, Jonathan (Leckband)		ChBE	leckband@uiuc.edu	
Jensen, Tor Wolf		IGB	torwolf@uiuc.edu	
Bhalerao, Kaustubh		ABE	bhalerao@uiuc.edu	
Li, Fang (Leckband)		ChBE	leckband@uiuc.edu	