

MECHANOBIOLOGY AFTER 10 YEARS: THE PROMISE OF MECHANOMEDICINE
7-10 November 2018, Singapore
Shaw Foundation Alumni House, National University of Singapore, Singapore
Programme

Day 1

Wednesday, 07 November 2018

8.00am	Registration
8.45am	Audience to be seated
8.50 am	Opening Remarks by Tan Eng Chye, President, National University of Singapore
8.55am	Welcome Address by Michael Sheetz, Director, Mechanobiology Institute, Singapore
	Session I: Mechanics of Cancer Chairperson: Rishita Changede, Mechanobiology Institute, Singapore
9.00am – 9.30am	Michael Sheetz, Mechanobiology Institute, Singapore <i>The Transformed Cancer State: Rigidity Insensitive but Death by Stretch</i>
9.30am – 10.00am	Johanna Ivaska, Turku Centre for Biotechnology, University of Turku, Finland <i>Mechanosensitive regulation of cancer and pluripotency</i>
10.00am – 10.30am	Victoria Sanz Moreno, Queen Mary University of London, UK <i>Targeting cytoskeletal dynamics as a therapeutic approach in cancer</i>
10.30am – 11.00am	Coffee Break
11.00am – 11.30am	Giannino Del Sal, University of Trieste & IFOM-FIRC Institute of Molecular Oncology, Italy <i>The interplay between mechano-signalling and the mevalonate pathway: the case of mutant p53</i>
11.30am – 12.00pm	Low Boon Chuan, Mechanobiology Institute, Singapore <i>BCH domain as a versatile scaffold protein module and p(l)acemaker in GTPases, kinases and metabolic signaling</i>
12.00pm – 12.15pm	Kristina Havas, IFOM-FIRC Institute of Molecular Oncology, Italy <i>The many roles of Metabolic Dysregulation in Breast Cancer Progression</i>
12.15pm – 12.30pm	Jean-Francois Rupprecht, Mechanobiology Institute, Singapore <i>Myosin Motors in Rigidity Sensing Contractions</i>
12.30pm – 1:15pm	Lightning talks – Group I – Presentations by Poster Presenters
1.15 pm – 2.00pm	Lunch Break / Poster Session
	Session II: Cell-Cell Interactions Chairperson: Ronen Zaidel-Bar, Tel Aviv University Medical School, Israel & Mechanobiology Institute, Singapore
2.00pm – 2.30pm	Alpha Yap, University of Queensland, Australia <i>Mechanotransduction at adherens junctions: its function and dysfunction in epithelial homeostasis</i>
2.30pm – 3.00pm	Deborah Leckband, University of Illinois at Urbana-Champaign, USA <i>Intercellular Force Transduction</i>

3.00pm – 3.30pm	Vania Braga, Imperial College, London, UK <i>Cell confinement impacts on cortical elasticity, configuration and dynamics of junctions</i>
3.30pm – 4.00pm	Coffee Break
4.00pm – 4.30pm	Virgile Viasnoff, Mechanobiology Institute, Singapore & CNRS, France <i>Inducing apico basal polarity one cell at a time</i>
4.30pm – 5.00pm	Sandrine Etienne-Manneville, Institut Pasteur, France <i>Microtubules in mechanosensitivity during cell migration</i>
5.00pm – 5.30pm	Lim Chwee Teck, Mechanobiology Institute, Singapore <i>Modes of Collective Cell Migration on 2- and 3-D Substrata</i>
5.30pm – 5.45pm	Tetsuya Hiraiwa, The University of Tokyo, Japan <i>Collective cell movement driven by Cell-cell junction shrinkage combined with Chirality</i>
5.45pm – 6.00pm	Elisabeth Labruyere, Institut Pasteur, France <i>A mechano-imaging method to quantify intracellular biophysics</i>
6.00 pm – 6:45 pm	Lightning talks – Group II – Presentations by Poster Presenters
6.45pm – 8.45pm	Light Dinner, Networking & Poster Session

Day 2

Thursday, 08 November 2018

8.50am	Audience to be seated
	Session III: Cellular Architecture at Different Scales Chairperson: Yee Han Tee, Mechanobiology Institute, Singapore
9.00am – 9.30am	Michael Way, The Francis Crick Institute, UK <i>New levels of complexity in Arp2/3 driven actin polymerization</i>
9.30am – 10.00am	Benjamin Geiger, Weizmann Institute of Science, Israel <i>Environmental Regulation of Invadopodia Formation and Function</i>
10.00am – 10.30am	Satyajit Mayor, National Centre for Biological Sciences, India <i>Integrin receptor signalling results in functional mechano-chemically gated lipid microenvironments driven by the acto-myosin based nanoclusters</i>
10.30am – 11.00am	Coffee Break
11.00am – 11.30am	Alexander Bershadsky, Mechanobiology Institute, Singapore <i>Integrin-mediated Adhesions at the Crossroads between Microtubules and the Actomyosin Cytoskeleton</i>
11.30pm – 12.00pm	David Weitz, Harvard University, USA <i>Mechanics of reconstituted interpenetrating biopolymer networks</i>
12.00pm – 12.30pm	Sunney Xie, Peking University, China <i>Single Cell Genomics: When Stochasticity Meets Precision</i>
12.30pm – 1.15 pm	Lightning talks – Group III – Presentations by Poster Presenters
1.15pm – 2.00pm	Lunch Break / Poster Session
	Session IV: Pathogenesis Chairperson: Khin Khine Mon, Mechanobiology Institute, Singapore
2.00pm – 2.30pm	Julie Theriot, University of Washington, USA <i>Macrophages chew before swallowing: Deformable microparticle force reporters reveal the complex cellular forces generated during phagocytosis</i>
2.30pm – 3.00pm	Linda J Kenney, Mechanobiology Institute, Singapore <i>The pearling transition provides evidence of force-driven endosomal tubulation during Salmonella infection</i>
3.00pm – 3.30pm	Mahak Sharma, IISER-Mohali, India <i>Lyso(h)ome: Salmonella residence for replication</i>
3.30pm – 4.00pm	Coffee Break
4.00pm – 4.30pm	Serge Mostowy, Imperial College, London, UK <i>Use of the cytoskeleton to control Shigella infection</i>
4.30pm – 5.00pm	Nicolas Biais, City University of New York, USA <i>Superheroes of the Human Microbiota and Beyond: an introduction to Mechano-Micro-Biology</i>
5.00pm – 5.15pm	Stuti Desai, Mechanobiology Institute, Singapore <i>Salmonella biofilms provide an adaptive advantage in the persistently infected heterologous host Caenorhabditis elegans</i>

Day 3**Friday, 09 November 2018**

8.50am	Audience to be seated
	Session V: Developmental Mechanics Chairperson: Prabhat Tiwari, Mechanobiology Institute, Singapore
9.00am – 9.30am	Yusuke Toyama, Mechanobiology Institute, Singapore <i>Mechanical impact of apoptosis in tissue homeostasis</i>
9.30am – 10:00am	Denise Montell, University of California, Santa Barbara, USA <i>Making and Breaking Epithelial Connections</i>
10.00am – 10.30am	Boris Shraiman, University of California, Santa Barbara, USA <i>Global View of Morphogenetic Flow in Fly Embryo</i>
10.30am – 11.00am	Coffee Break
11.00am – 11.30am	Frank Schnorrer, CNRS, France <i>The Biomechanics of Sarcomere Morphogenesis</i>
11.30am – 12.00pm	Timothy Saunders, Mechanobiology Institute, Singapore <i>Selective Filopodia Adhesion Ensures Robust Cell Matching in the Drosophila Heart</i>
12.00pm – 12.15pm	Nils Gauthier, IFOM-FIRC Institute of Molecular Oncology, Italy <i>Membrane-cytoskeleton mechanical feedback mediated by myosin-I controls phagocytic efficiency</i>
12.15pm – 12.30pm	Yashuhiro Sawada, Department of Clinical Research, National Rehabilitation Center for Persons with Disabilities, Japan <i>Local Cyclical Compression Modulates Macrophage Function In Situ and Alleviates Immobilization-Induced Muscle Atrophy</i>
12.30pm – 2.00pm	Lunch Break / Poster Session
	Session VI: Transcription Regulation & Stem-Cell Biology Chairperson: Bryant Lee Doss, Mechanobiology Institute, Singapore
2.00pm – 2.30pm	G.V. Shivashankar, Mechanobiology Institute, Singapore & IFOM-FIRC Institute of Molecular Oncology, Italy <i>Mechanogenomic Code for Nuclear Reprogramming</i>
2.30pm – 3.00pm	Elaine Fuchs, The Rockefeller University, USA <i>Coping with Stress: How Stem Cells Protect Themselves During Injury, Inflammation and Niche Perturbations</i>
3.00pm – 3.30pm	Richard Treisman, The Francis Crick Institute, UK <i>G-actin as a signalling molecule</i>
3.30pm – 4.00pm	Coffee Break
4.00pm – 4.30pm	Justin Cooper-White, University of Queensland, Australia <i>Unravelling the impact of local force transmission on human stem cell fate choice and exploiting targeted delivery of oligonucleotides to regain control of it!</i>
4.30pm – 5.00pm	Srikala Raghavan, Institute for Stem Cell Biology & Regenerative Medicine, India <i>Role of Mechanotransduction in Maintaining Stem Cell Quiescence in Mouse Skin</i>
5.00pm – 5.30pm	Pakorn (Tony) Kanchanowong, Mechanobiology Institute, Singapore <i>Probing the actin cortex of embryonic stem cells by super-resolution microscopy</i>

5.30pm – 5.45pm	Evelyn Yim, University of Waterloo, Canada <i>Engineering cell niche with biomaterials topographies for stem cell differentiation</i>
5.45pm – 6.00pm	Yongdae Shin, Seoul National University, South Korea <i>Optogenetic control of intracellular phase separation</i>
6.30pm – 9.00pm	Conference Banquet (Kent Ridge Guild House, National University of Singapore)

Day 4

Saturday, 10 November 2018

8.50am	Audience to be seated
	Session VII: Single Molecule Biophysics Chairperson: Artem Yefremov, Mechanobiology Institute, Singapore
9.00am – 9.30am	James R Sellers, National Institutes of Health, USA <i>Mechanical and filament assembly properties of nonmuscle myosin 2</i>
9.30am – 10.00am	Hermann Gaub, University of Munich, Germany <i>Molecular Mechanisms of Extreme Mechanostability in Protein Complexes</i>
10.00am – 10.30am	Julio Fernandez, University of Columbia, USA <i>Titin folding powers muscle contraction</i>
10.30am – 11.00am	Coffee Break
11.00am – 11.30am	Yan Jie, Mechanobiology Institute, Singapore <i>Effects of force on the stability and interactions of mechanosensing proteins</i>
11.30am – 12.00pm	Shin'ichi Ishiwata, Waseda University, Japan <i>Self-Organization of Actin Filaments in vitro and in an Artificial Cell System</i>
12.00pm – 12.15pm	Raul Perez-Jimenez, CIC nanoGUNE, Spain <i>Mechanical architecture and folding of E coli type 1 pilus domains</i>
12.15pm – 2.00pm	Lunch Break / Poster Session
	Session VIII: Cell Dynamics & Migration Chairperson: Sham Leilah Tlili, Mechanobiology Institute, Singapore
2.00pm – 2.30pm	Sally Horne-Badovinac, University of Chicago, USA <i>Feedback between planar cell-cell signaling and mechanical cues coordinates individual cell movements for collective migration</i>
2.30pm – 3.00pm	Pekka Lappalainen, University of Helsinki, Finland <i>Assembly of mechanosensitive actomyosin bundles in migrating cells</i>
3.00pm – 3.15pm	Gautham Hari Narayana Sankara Narayana, Institut Jacques Monod, France <i>Myosin-II Isoforms play distinct roles on adherens junction dynamics</i>
3.15pm – 3.30pm	Chao Yang, Utrecht University, Netherlands <i>Control of microtubule organization and dynamics by End Binding proteins</i>
3.30pm – 4.00pm	Coffee Break
4.00pm – 4.30pm	Tatiana Marquez-Lago, University of Alabama at Birmingham, USA <i>AI and modeling in cell biology, pathogenesis and mechanomedicine</i>
4.30pm – 5.00pm	Thomas Pucadyil, IISER-Pune, India <i>Membrane Fission: Diverse Players, Convergent Mechanisms</i>
5.00pm – 5.30pm	Masaki Sano, Universal Biology Institute, University of Tokyo, Japan <i>Extracting Dynamics from Data in Collective Cell Migration: Force and Tissue Dynamics</i>
5.30pm – 5.45pm	Isabela Corina Santos Fortunato, Instituto de Medicina Molecular, Portugal <i>Unveiling mechanotransduction during collective cell migration?</i>
5.45pm – 6.00pm	Jian Liu, National Institutes of Health, USA <i>Two distinct actin networks drive focal adhesion formation, traction oscillation and mechanosensing</i>
6.00pm	Closing Remarks