

0800 – 0900	<b>Registration</b> (UTown Auditorium 1 Foyer)		
0900 – 0915	<b>Opening Ceremony</b> (UTown Auditorium 1)		
0915 – 1000	<b>Plenary Lecture 1</b> (UTown Auditorium 1) <i>Mechanisms regulating the invasive migration of cancer cells</i> <b>Benjamin GEIGER, Weizmann Institute of Science, Israel</b> <i>Chair: Michael SHEETZ, Mechanobiology Institute, Singapore</i>		
1000 – 1030	<b>Poster Session</b> <b>Coffee Break</b> (Level 2)		
1030 – 1200	<b>Session 1-1</b> (UTown Auditorium 1) <b>Actin Cytoskeleton I</b>	<b>Session 1-2</b> (Global Learning Room) <b>Mechanopathology I</b>	<b>Session 1-3</b> (Seminar Rooms 7 & 8) <b>Theory &amp; Simulations</b>
	<i>Session Chairs:</i> Peter GUNNING, University of New South Wales, Australia Yansong MIAO, Nanyang Technological University, Singapore	<i>Session Chairs:</i> Linda KENNEY, Mechanobiology Institute, Singapore Weiqiang CHEN, New York University, USA	<i>Session Chairs:</i> Jacques PROST, Institut Curie, France Sam SAFRAN, Weizmann Institute, Israel
	<b>1030 – 1100</b> <b>Keynote Lecture</b> <i>Multiple actin filament populations collaborate to enable exocytosis</i> Peter GUNNING University of New South Wales, Australia	<b>Keynote Lecture</b> <i>Pearling transition mechanics influence force-driven endosomal tubulation during salmonella infection</i> Linda KENNEY Mechanobiology Institute, Singapore	<b>Keynote Lecture</b> <i>Molecular motor collections and elementary contractile unit</i> Jacques PROST Institut Curie, France
	<b>1100 – 1115</b> <i>The actin branches under force: from cell cortex to durotaxis, and tumor mechanics</i> Congying WU Peking University, China	<i>Endogenous traction-imbalance of tumor drives the emergence of cancer stem cells</i> Weiqiang CHEN (Inv) New York University, USA	<i>Mechanogens: morphogens that induce contractility in cells and cellular assemblies</i> Sam SAFRAN (Inv) Weizmann Institute, Israel
	<b>1115 – 1130</b> <i>Intrinsically disordered regions of actin binding protein regulate dynamic actin assembly</i> Yansong MIAO Nanyang Technological University, Singapore	<i>The Shigella IpaA effector targets talin conformers involved in bacterial capture by filopodia</i> Guy TRAN VAN NHIEU CIRB - College de France, France	<i>Probing eukaryotic cell mechanics via experiments and mesoscopic simulations</i> Igor E PIVKIN (Inv) Institute of Computational Science, Switzerland
	<b>1130 – 1145</b> <i>mDia1 senses both force and torque during F-actin filament polymerization</i> Miao YU Mechanobiology Institute, Singapore	<i>Role of mechanical microenvironment in aggressive nature of relapsed GBM cells post radiotherapy</i> Pallavi SHIRKE Indian Institute of Technology Bombay, India	<i>The actomyosin cytoskeleton drives spontaneous folding of hydra fragments</i> XU Xinpeng Guangdong-Technion Institute of Technology, China
<b>1145 – 1200</b> <i>Force dependence of filopodia adhesion: involvement of myosin II and formins</i> Naila ALIEVA Mechanobiology Institute, Singapore	<i>Hepatitis C Virus alters the mechanics of the nuclei by down-regulating Lamin A/C</i> Sreenath BALAKRISHNAN Indian Institute of Science, India	<i>Maximal fluctuations of confined actomyosin gels: dynamics of the cell nucleus</i> Jean-Francois RUPPRECHT Mechanobiology Institute, Singapore	
1200 – 1330	<b>Poster Session</b> <b>Lunch</b> (Level 2)		

1330 – 1415

**Plenary Lecture 2**

(UTown Auditorium 1)

*Multiple Mechanosensing and Mechanotransduction steps in Anoikis and Cancer*

**Michael SHEETZ, Mechanobiology Institute, Singapore**

*Chair: G.V. SHIVASHANKAR, Mechanobiology Institute, Singapore*

**Session 1-4**  
(UTown Auditorium 1)

**Session 1-5**  
(Global Learning Room)

**Session 1-6**  
(Seminar Rooms 7 & 8)

**Actin Cytoskeleton II**

**Mechanopathology II**

**Development**

*Session Chairs:*

Alexander BERSHADSKY,  
Mechanobiology Institute, Singapore  
Gareth JONES, Kings College, London,  
UK

*Session Chairs:*

Guy GENIN, Washington University in  
St. Louis, USA  
Youhua TAN, The Hong Kong  
Polytechnic University, Hong Kong

*Session Chairs:*

Kenji MATSUNO, Osaka University,  
Japan  
Yusuke TOYAMA, Mechanobiology  
Institute, Singapore

1415 – 1430

**Keynote Lecture**

*Self-organization of actomyosin  
cytoskeleton and cell  
morphogenesis*  
Alexander BERSHADSKY  
Mechanobiology Institute,  
Singapore

*Models of perimembrane  
mechanics in plant cell  
mechanobiology*

Guy GENIN (Inv)  
Washington University in St. Louis,  
USA

**Keynote Lecture**

*Cell chirality drives left-right  
asymmetric morphogenesis*  
Kenji MATSUNO  
Osaka University, Japan

1430 – 1445

*Blood shear stress selects  
circulating tumour cells with  
metastatic advantages*  
Youhua TAN  
The Hong Kong Polytechnic  
University, Hong Kong

1415 – 1545

1445 – 1500

*Talin - a mechanical link and a  
signalling hub*  
Vesa HYTÖNEN  
University of Tampere, Finland

*Fibrosis mechanobiology and  
its therapeutic implications in  
cardiovascular disease*  
Guoyou HUANG  
Xi'an Jiaotong University, China

*Mechanical Impact of Apoptosis in  
a Tissue*  
Yusuke TOYAMA  
Mechanobiology Institute,  
Singapore

1500 – 1515

*Diverse patterns of molecular  
changes in the responses of single  
focal adhesions to actomyosin  
perturbations*  
Eli ZAMIR  
Max-Planck Institute for Medical  
Research, Germany

*New insights into the biochemical  
and biomechanical interplay  
between the tumour and its stroma*  
Michael SAMUEL  
Centre for Cancer Biology,  
Australia

*In toto quantitative imaging tools  
to study drosophila ventral nerve  
cord condensation*  
Sham TLILI  
Mechanobiology Institute,  
Singapore

1515 – 1530

*Mechanoregulation of integrin-  
mediated adhesions: Interplay  
between microtubules and myosin-  
IIA filaments through GEF-H1 and  
KANK family proteins*  
Nisha MOHD RAFIQ  
Mechanobiology Institute,  
Singapore

*Nanoscale mechanics of benign  
and malignant brain tumour tissues*  
Gabriele CIASCA  
Università Cattolica del Sacro  
Cuore, Italy

*Mechanical regulation of chemical  
signalling in the developing  
Xenopus brain*  
Eva PILLAI  
University of Cambridge, UK

1530 – 1545

*Local and global remodelling of  
cortical myosin by the mitotic  
kinase Aurora-A*  
Peng ZHAO  
Temasek Life Sciences Laboratory,  
Singapore

*Seeking P. falciparum Sequestration  
Strategies: Getting warmer with  
each bond*  
Ying Bena LIM  
NUS/SMART ID IRG, Singapore

*The role of phospholipid flippase in  
myotube formation*  
Yuji HARA  
Kyoto University, Japan

1545 – 1615

**Poster Session**

**Coffee Break**

(Level 2)

	Session 1-7 (UTown Auditorium 1)	Session 1-8 (Global Learning Room)	Session 1-9 (Seminar Rooms 7 & 8)
	<p><b>Cell-cell interaction</b></p> <p><i>Session Chairs:</i> Alpha YAP, The University of Queensland, Australia K. Venkatesan IYER, Max Planck Institute of Molecular Cell Biology and Genetics, Germany</p>	<p><b>Forces &amp; Energy in Biosystems</b></p> <p><i>Session Chairs:</i> WANG Chunguang, Tongji University, China Satoshi ARAI, Waseda University, Japan</p>	<p><b>Special Session - Mechanobiology of nuclear and chromatin deformations: Implications for gene expression</b></p> <p><i>Organizer:</i> Sam SAFRAN, Weizmann Institute of Science, Israel <i>Session Chairs:</i> Sam SAFRAN, Weizmann Institute of Science, Israel Madan RAO, National Centre for Biological Sciences, India</p>
1615 – 1630	<p><b>Keynote Lecture</b></p> <p><i>Junctional mechanotransduction: a neighbourhood watch mechanism for epithelial homeostasis?</i> Alpha YAP The University of Queensland, Australia</p>	<p><b>Keynote Lecture</b></p> <p><i>How the chemical energy of ATP is transformed into mechanical work by kinesin proteins</i> Chunguang WANG Tonji University, China</p>	<p><i>Role of active stresses in nuclear geometry and chromatin organisation at different scales</i> Madan RAO (Inv) National Centre for Biological Sciences, India</p>
1630 – 1645			<p><i>Nuclear Mechanogenomics &amp; Early Disease Diagnosis</i> G.V. SHIVASHANKAR (Inv) Mechanobiology Institute, Singapore</p>
1645 – 1700	<p><i>p120ctn is a mechanotransducer that modulates E-Cadherin turnover by mechanical tension</i> K. Venkatesan IYER Max Planck Institute of Molecular Cell Biology and Genetics, Germany</p>	<p><i>Thermal control of cellular functions using a nano-heater</i> Satoshi ARAI Waseda University, Japan</p>	<p><i>Cell-geometry regulates TNF<math>\alpha</math>-induced genome response</i> Aninda MITRA Mechanobiology Institute, Singapore</p>
1700 – 1715	<p><i>The mechanotransduction role of cell-cell junction in cell extrusion context - An Alpha-Catenin study</i> Anh Phuong LE Mechanobiology Institute, Singapore</p>	<p><i>Application of transfer-matrix calculations to studying DNA behavior and DNA-protein interactions under mechanical constraints</i> Artem EFREMOV Mechanobiology Institute, Singapore</p>	<p><i>Rupture dynamics and chromatin herniation in deformed nuclei</i> Dan DEVIRI (Inv) Weizmann Institute of Science, Israel</p>
1715 – 1730	<p><i>Cell matching during Drosophila embryonic heart formation</i> Shaobo ZHANG Mechanobiology Institute, Singapore</p>	<p><i>Mechanical forces of DNA looping and condensation revealed by high-throughput computer simulations and single-molecule experiments</i> Jejoong YOO Institute for Basic Science, South Korea</p>	<p><i>Mechano-protection by lamin-A against DNA damage as the developing heart stiffens and strengthens</i> Sangkyun CHO (Inv) University of Pennsylvania, USA</p>
1730 – 1745	<p><i>Large-scale curvature sensing by directional actin flow drives cellular migration mode switching</i> Tianchi CHEN Mechanobiology Institute, Singapore</p>	<p><i>High hydrostatic pressure restores the rhythmical beating motion of paralyzed-flagella mutants of Chlamydomonas</i> Masayoshi NISHIYAMA Kyoto University, Japan</p>	<p><i>Compressive force induces HDAC3 dependent reversible chromatin condensation</i> Karthik DAMODARAN Mechanobiology Institute, Singapore</p>
1800 – 1900	<p><b>Welcome Reception</b> (Level 2)</p>		

0900 – 0945

**Plenary Lecture 3**

(UTown Auditorium 1)

*Control and self-organization of cell mechanics during tissue morphogenesis*

**Thomas LECUIT, Aix-Marseille Université and CNRS. Collège de France, France**

*Chair: Virgile VIASNOFF, Mechanobiology Institute, Singapore*

0945 – 1015

**Poster Session**

**Coffee Break**

(Level 2)

**Session 2-1**  
(UTown Auditorium 1)

**Mechanotransduction I**

*Session Chairs:*  
Ben GOULT, University of Kent, UK  
Takeo MATSUMOTO, Nagoya University, Japan

**Session 2-2**  
(Global Learning Room)

**Patterning**

*Session Chairs:*  
Min WU, Mechanobiology Institute and NUS Centre for Biomedical Imaging Sciences (CBIS), National University of Singapore, Singapore  
Timothy SAUNDERS, Mechanobiology Institute, Singapore

**Session 2-3**  
(Seminar Rooms 7 & 8)

**Special Session -  
Mechanobiology in fibrosis related diseases**

*Organizer:*  
Ming-Jer TANG, National Cheng Kung University Medical College, Taiwan  
*Session Chairs:*  
Ming-Jer TANG & Yau-Sheng TSAI, National Cheng Kung University Medical College, Taiwan

1015 – 1030

**Keynote Lecture**

*The Talin Code: Deciphering mechanotransduction using structural mechanobiology*  
Ben GOULT

University of Kent, UK

*Information content of intracellular patterns*  
Min WU

Mechanobiology Institute, National University of Singapore

*On the growth and form of the zebrafish myotome*  
Timothy SAUNDERS  
Mechanobiology Institute, Singapore

**Keynote Lecture**

*Mechanobiology of chronic kidney fibrosis*

Ming Jer TANG  
National Cheng Kung University Medical College, Taiwan

1030 – 1045

1045 – 1100

*Estimation of shear deformation of glycocalyx layer on vascular endothelial cells in response to fluid flow*

Takeo MATSUMOTO (Inv)  
Nagoya University, Japan

*Chiral morphogenesis of individual cells and cell groups depends on formin-driven polymerization and alpha-actinin-mediated crosslinking of actin filaments*  
Yee Han TEE  
Mechanobiology Institute, Singapore

*Adipose tissue stiffness in the development of metabolic diseases*

Yau-Sheng TSAI (Inv)  
National Cheng Kung University Medical College, Taiwan

1100 – 1115

*Mechanotransduction of blood flow in human monocytes*

Sara BARATCHI  
RMIT University, Australia

*When the centrosome and the nucleus break up: Nucleus-independent spatial patterning in the syncytial embryo*  
Jorge DE-CARVALHO  
Instituto Gulbenkian de Ciência, Portugal

*PAI-1 Activates Pancreatic Stellate Cells to Increase the Stiffness of Tumour and Determines Early Relapse of Pancreatic Cancer*  
Hao-Chen WANG  
National Cheng Kung University, Taiwan

1115 – 1130

*Mechanotransmission and mechanosensing of human alpha-actinin 1*

Shimin LE  
National University of Singapore, Singapore

*Reconstitution of self-organizing PAR polarity circuits*  
Ziyin HAN  
Temasek Life sciences Laboratory, Singapore

*Pathologic Cutaneous Scars and Mechanobiology- Mechanotherapy for keloids and Hypertrophic scars*  
Rei OGAWA (Inv)  
Nippon Medical School, Japan

1130 – 1145

*Mechano-sensitive interaction between Talin and full-length Vinculin*

Yinan WANG  
National University of Singapore, Singapore

*Beyond Turing: mechanochemical basis of pattern formation in active biological materials*  
Tzer Han TAN  
MIT Physics of Living System, USA

*Spatial distribution of wound stiffness modulates wound induced hair follicle neogenesis*  
Hans HARN (Inv)  
National Cheng Kung University, Taiwan

1015– 1145

1145 – 1300

**Poster Session  
Lunch  
(Level 2)**

1300 – 1345

**Plenary Lecture 4  
(UTown Auditorium 1)**

*Unravelling the biomechanical functions of keratin filaments*  
**Birgit LANE, Institute of Medical Biology & Skin Research Institute of Singapore, Singapore**  
 Chair: Min WU, Mechanobiology Institute, National University of Singapore

Session 2-4 (UTown Auditorium 1)	Session 2-5 (Global Learning Room)	Session 2-6 (Seminar Rooms 7 & 8)
<b>Mechanotransduction II</b>	<b>Geometry and Rigidity Sensing</b>	<b>Special Session - Single-molecule force spectroscopy, mechanosensing, and immunomechanobiology</b>
<p><i>Session Chairs:</i>                      Vivek SHENOY, University of Pennsylvania, USA                      K.HSIA, Carnegie Mellon University, USA</p>	<p><i>Session Chairs:</i>                      Kristian FRANZE, University of Cambridge, UK                      Wenting ZHAO, Nanyang Technological University, Singapore</p>	<p><i>Organizer:</i>                      Xiaohui (Frank) ZHANG, Lehigh University, USA  <i>Session Chairs:</i>                      Xiaohui (Frank) ZHANG, Lehigh University, USA                      Ching-Hwa KIANG, Rice University, USA</p>

1345 – 1415

<b>Keynote Lecture</b>	<b>Keynote Lecture</b>	<b>Keynote Lecture</b>
<p><i>Cell-matrix interactions in Fibrosis and cancer: Multiscale mechano-chemical models</i>                      Vivek SHENOY                      University of Pennsylvania, USA</p>	<p><i>The mechanical regulation of neuronal development and regeneration</i>                      Kristian FRANZE                      University of Cambridge, UK</p>	<p><i>Biomechanical characterization of von Willebrand Factor - a giant plasma protein and flow sensor</i>                      Xiaohui (Frank) ZHANG                      Lehigh University, USA</p>

1345 – 1515

1415 – 1430

<p><i>Cell responses to ECM geometry in 2D and 3D culture</i>                      K. HSIA (Inv)                      Carnegie Mellon University, USA</p>	<p><i>Nanoscale manipulation of membrane curvatures for subcellular recruitment of endocytic protein machinery in live cells</i>                      Wenting ZHAO                      Nanyang Technological University, Singapore</p>	<p><i>Analysing biomolecular and cellular dynamics through single molecule and single cell force studies</i>                      Ching-Hwa KIANG (Inv)                      Rice University, USA</p>
---	---	---

1430 – 1445

<p><i>Nanoclusters of integrins organize cell matrix adhesions</i>                      Rishita CHANGEDE                      Mechanobiology Institute, Singapore</p>	<p><i>Frustrated differentiation of mesenchymal stem cells induced by normadic migration between stiff and soft region of hydrogel matrix</i>                      Satoru KIDOAKI                      Kyushu University, Japan</p>	<p><i>Single molecule mechanics probed by high-speed force spectroscopy</i>                      Felix RICO (Inv)                      U1006 Inserm &amp; Aix-Marseille University</p>
---	---	--

1445 – 1500

<p><i>Actomyosin dynamics couples extracellular signals to the mobility and molecular stability of telomeric chromatin</i>                      Dooragesh Sharma JOKHUN                      Mechanobiology Institute, Singapore</p>	<p><i>Geometric Confinement of Cells induces nuclear reprogramming</i>                      Bibhas ROY                      Mechanobiology Institute, Singapore</p>	<p><i>High-Resolution Cryo-EM structures of actin-bound myosin states reveal the mechanism of myosin force sensing</i>                      Michael OSTAP (Inv)                      University of Pennsylvania, USA</p>
--	---	--

1500 – 1515

<p><i>Role of 3D chromatin structure in differential genome regulation</i>                      Saradha V. PATHY                      Mechanobiology Institute, Singapore</p>	<p><i>Fixing the faulty rigidity sensing machine</i>                      Beverly Bo YANG                      Mechanobiology Institute, Singapore</p>	<p><i>Single molecule force microscopy reveals the unfolding mechanism and landscape of metallothionein</i>                      Peng ZHENG (Inv)                      Nanjing University, China</p>
---	--	--

1515 – 1545

**Poster Session  
Coffee Break  
(Level 2)**

	Session 2-7 (UTown Auditorium 1)	Session 2-8 (Global Learning Room)	Session 2-9 (Seminar Rooms 7 & 8)
	<b>Microscopy &amp; Spectroscopy</b>  <i>Session Chairs:</i> Thomas PERKINS, University of Colorado, USA Pakorn (Tony) KANCHANAWONG, Mechanobiology Institute, Singapore	<b>Polarity</b>  <i>Session Chairs:</i> Virgile VIASNOFF & Fumio MOTEGI Mechanobiology Institute, Singapore	<b>Special Session - Cancer Mechanobiology</b>  <i>Organizer:</i> Michael R. KING, Vanderbilt University, USA <i>Session Chairs:</i> Michael R. KING, Vanderbilt University, USA Peter Yingxiao WANG, UCSD, USA
1545 – 1600	<b>Keynote Lecture</b>  <i>Improving AFM reveals a multitude of hidden dynamics in the unfolding of a membrane protein</i> Thomas PERKINS University of Colorado, USA	<i>Biomechanical signaling in the development of Apical poles</i> Virgile VIASNOFF Mechanobiology Institute, Singapore	<i>Shear stress survival and drug responses of circulating tumor cells</i> Michael R. KING (Inv) Vanderbilt University, USA
1600 – 1615		<i>Cortical forces control clustering of PAR-type polarity regulators in C. elegans embryos</i> Fumio MOTEGI Mechanobiology Institute & Temasek Lifesciences Laboratory, Singapore	<i>Mechanogenetics for the remote and non-invasive control of cancer immunotherapy</i> Peter Yingxiao WANG (Inv) University of California, San Diego, USA
1615 – 1630	<i>Advanced multimodal microscopy identifies mechanisms of podosome mediated stiffness sensing</i> Koen VAN DEN DRIES Radboud Institute for Molecular Life Sciences, Netherlands	<i>Migration component dynamics and front-rear interplay</i> Kritika SAHNI The Institute of Complex Systems (ICS), Forschungszentrum jülich, Germany	<i>Tumor cell extravasation and the role of mechanical interactions</i> Roger KAMM (Inv) Massachusetts Institute of Technology, USA
1630 – 1645	<i>Combining super-resolution microscopy and cell stretching: a window for mechano-transduction in focal adhesions</i> Sophie MASSOU Interdisciplinary Institute for Neurosciences, France	<i>Apical-basal polarity induced in single hepatocyte by biomimetic surface as a model for studying de novo lumen formation</i> Yue ZHANG Mechanobiology Institute, Singapore	<i>Fluid shear stress resistance in circulating tumor cells</i> Michael D. HENRY (Inv) University of Iowa, USA
1645 – 1700	<i>Engineering three-dimensional cellular mechanical microenvironment with magnetic microscale hydrogels</i> Yuhui LI Xi'an Jiaotong University, China	<i>Mechanosensing via talin rod is indispensable for cell polarization</i> Rolle RAHIKAINEN University of Tampere, Finland	<i>Regulation of selectin ligands and mechanical properties of breast cancer cells by the epithelial-to-mesenchymal transition</i> Monica BURDICK (Inv) Ohio University, USA
1700 – 1715	<i>Mechanisms regulating Actin cortex architecture in embryonic stem cells</i> Shumin XIA Mechanobiology Institute, Singapore	<i>Three-dimensional epithelial cell intercalation drives tissue convergent extension</i> Zijun SUN Mechanobiology Institute, Singapore	<i>Mechanical amplification of tumor cell death via tethered polymeric nanoparticles</i> Michael MITCHELL (Inv) Massachusetts Institute of Technology, USA

0900 – 0945

**Plenary Lecture 5**

(UTown Auditorium 1)

*Molecular mechanisms of microtubule-based control of cell motility*

**Anna AKHMANOVA, Utrecht University, Netherlands**

*Chair: Jie YAN, Mechanobiology Institute, Singapore*

0945 – 1015

**Poster Session**

**Coffee Break**

(Level 2)

**Session 3-1**  
(UTown Auditorium 1)

**Session 3-2**  
(Global Learning Room)

**Session 3-3**  
(Seminar Rooms 7 & 8)

**Tissue I**

*Session Chairs:*

*David ELAD, Tel Aviv University, Israel  
Arno GUTLEB, Luxembourg Institute of  
Science & Technology, Luxembourg*

**AMED-CREST/PRIME  
Special Session I - Molecular  
Mechanisms of Cell  
Mechanosensing**

*Organizers & Session Chairs:*

*Masahiro SOKABE, Nagoya University,  
Japan  
Kimiko YAMAMOTO, The University of  
Tokyo, Japan*

**Special Session - Sarcomere-  
like organization and dynamics  
in fibroblasts and beating  
cardiomyocytes**

*Organizer:*

*Sam SAFRAN, Weizmann Institute of  
Science, Israel*

*Session Chairs:*

*Sam SAFRAN, Weizmann Institute of  
Science, Israel  
Shelly TZLIL, Technion, Israel*

1015 – 1030

**Keynote Lecture**

*Tissue engineered biological  
barriers for mechanobiology studies*  
**David ELAD**  
Tel Aviv University, Israel

**Keynote Lecture**

*Endothelial cell mechanosensing  
via membrane lipids*  
**Kimiko YAMAMOTO**  
The University of Tokyo, Japan

*The role of  $\alpha$ -catenin in ECM  
mechanosensing through  
sarcomere-like contractile units*  
**Haguy WOLFENSON (Inv)**  
Technion-Israel Institute of  
Technology, Israel

1030 – 1045

*Mechanical communication as a  
noise filter and its role in cardiac  
arrhythmias and synchronized  
beating*  
**Shelly TZLIL (Inv)**  
Technion-Israel Institute of  
Technology, Israel

1015 – 1145

1045 – 1100

*3D-in vitro Alveolar models – The  
future is here!*  
**Arno GUTLEB (Inv)**  
Luxembourg Institute of Science &  
Technology, Luxembourg

*Pannexin-1, a mechano-chemical  
sensor in the heart*  
**Tetsushi FURUKAWA (Inv)**  
Tokyo Medical & Dental University,  
Japan

*Multi-scale sarcomere organization  
and genetic mutation effect on  
emergent cardiac tissue function*  
**Anna GROSBERG (Inv)**  
University of California, Irvine, USA

1100 – 1115

*Novel Cell Stretching Dish*  
**Qingsen LI**  
IFOM, Italy

*Identification and functional  
analysis of solo, A Rho-GEF  
involved in mechanotransduction*  
**Kazumasa OHASHI (Inv)**  
Tohoku University, Japan

*Self-organization and regulation of  
myosin II filament stacks in non-  
muscle cells*  
**Shiqiong HU (Inv)**  
Mechanobiology Institute,  
Singapore

1115 – 1130

*Mechanical impact of apoptotic cell  
extrusion in neighbouring tissue*  
**Ying Ming Ivan YOW**  
Mechanobiology Institute,  
Singapore

*The actin filament as a tension  
sensor*  
**Hitoshi TATSUMI (Inv)**  
Kanazawa Institute of Technology,  
Japan

*Non-linear dynamics of cardiac  
cells*  
**Ohad COHEN (Inv)**  
Weizmann Institute of Science,  
Israel

1130 – 1145

*Topological defects in epithelia  
govern cell death and extrusion*  
**Thuan Beng SAW**  
Mechanobiology Institute,  
Singapore

*Mechanoresponse in beating cilia  
and flagella*  
**Kenjiro YOSHIMURA (Inv)**  
Shibaura Institute of Technology,  
Japan

*Adhesion-contratility crosstalk is  
perturbed in diabetic fibroblasts*  
**Iffat JAHAN**  
Indian Institute of Technology  
Bombay, India

1145 – 1300

**Poster Session  
Lunch  
(Level 2)**

1300 – 1345

**Plenary Lecture 6  
(UTown Auditorium 1)**

*Acto-myosin driven functional nanoclusters of GPI-APs are generated by integrin receptor signaling*

**Satyajit MAYOR, National Centre for Biological Sciences, India**

*Chair: Timothy SAUNDERS, Mechanobiology Institute, Singapore*

**Session 3-4  
(UTown Auditorium 1)**

**Tissue II**

*Session Chairs:*  
Rebecca WELLS, University of Pennsylvania, USA  
Paul MATSUDAIRA, Mechanobiology Institute, Singapore

**Session 3-5  
(Global Learning Room)**

**Special Session - Innovation and New Technologies for Mechanobiology**

*Organizers:*  
Guy GENIN, Washington University in St. Louis, USA  
Vivek SHENOY, University of Pennsylvania, USA  
*Session Chairs:*  
Guy GENIN, Washington University in St. Louis, USA  
Chwee Teck LIM, Mechanobiology Institute, Singapore

**Session 3-6  
(Seminar Rooms 7 & 8)**

**Special Session - Diversity of Mechanosensitive Ion Channels in Eukaryotes**

*Organizer:*  
Boris MARTINAC, Victor Chang Cardiac Research Institute, Australia  
*Session Chairs:*  
Boris MARTINAC, Victor Chang Cardiac Research Institute, Australia  
Pingbo HUANG, Hong Kong University of Science & Technology, Hong Kong

1345 – 1415

**Keynote Lecture**

*Mechanics and the normal and diseased liver*  
Rebecca WELLS  
University of Pennsylvania, USA

**Keynote Lecture**

*Create or perish - innovate or die: catalyzing entrepreneurship and innovation*  
Dedric CARTER  
Washington University in St. Louis, USA

**Keynote Lecture**

*Structural and molecular bases underlying the ion permeation and mechanogating of the mechanosensitive Piezo Channel*  
Bailong XIAO  
Tsinghua University, China

1345 – 1515

1415 – 1430

*Myosin-II isoforms play distinct roles on adherens junction dynamic and collective migration*  
Rene-Marc MEGE (Inv)  
Institute Jacques Monod, France

*Fabrication and characterization of magnetic-vortex microdiscs for applying force in mechanobiological systems*  
Xuemei May CHENG (Inv)  
Bryn Mawr College, USA

*Probing the activity of mechanosensitive channels at the cell-substrate interface*  
Kate POOLE (Inv)  
University of New South Wales, Australia

1430 – 1445

*Coalescence of epithelial monolayers on a viscoelastic substrate is mediated by cross-talk between cell-matrix and cell-cell junctions through redistribution of vinculin*  
Paul MATSUDAIRA  
Centre for Bioluminescence Sciences, National University of Singapore, Singapore.

*From nano-scale to tissue-scale: developing novel technologies to study plant mechanobiology*  
Ryan CALCUTT (Inv)  
Washington University in St. Louis, USA

*Roles of TRP channels in the response to gravity in Chlamydomonas*  
Kenjiro YOSHIMURA (Inv)  
Shibaura Institute of Technology, Japan

1445 – 1500

*Keloid progression: a stiffness gap hypothesis*  
Chenyu HUANG  
Tsinghua University, China

**Keynote Lecture**

*Organ in a Drop*  
David A. Weitz  
Harvard University, USA

*Localization and physical/functional interactions of TMC1 and TMHS in hair cells*  
Pingbo HUANG (Inv)  
Hong Kong University of Science and Technology, Hong Kong

1500 – 1515

*The role of vimentin intermediate filaments in confined cell migration*  
Alison PATTESON  
University of Pennsylvania, USA

*pH dependent Ca<sup>2+</sup> binding and salt-bridge rearrangements underlie activation of the human TRAAK channel*  
Zhiqiang YAN (Inv)  
Fudan University, China



1515 – 1545

**Poster Session  
Coffee Break**  
(Level 2)

1545 – 1715

**Session 3-7**  
(UTown Auditorium 1)

**Tissue III**

*Session Chairs:*  
Delphine DELACOUR, Institut Jacques Monod, France  
Linhong DENG, Institute of Biomedical Engineering & Health Sciences, China

**Session 3-8**  
(Global Learning Room)

**Special Session - Cell-ECM Interactions**

*Organizers:*  
Guy GENIN, Washington University in St. Louis, USA  
Vivek SHENOY, University of Pennsylvania, USA  
*Session Chairs:*  
Vivek SHENOY, University of Pennsylvania, USA

**Session 3-9**  
(Seminar Rooms 7 & 8)

**AMED-CREST/PRIME Special Session II - Mechanobiology of muscles and blood vessels**

*Organizers & Session Chairs:*  
Masahiro SOKABE, Nagoya University, Japan  
Toshihiko OGURA, Tohoku University, Japan

1545 – 1615

**Keynote Lecture**

*EpCAM ensures correct epithelial cell organization and dynamics through regulation of cell contractility*  
Delphine DELACOUR  
Institut Jacques Monod, France

**Keynote Lecture**

*Engineering cell microenvironment using novel hydrogels for biomedical applications*  
Feng XU  
Xi'an Jiaotong University, China

**Keynote Lecture**

*The M project; Mechanical control of Metabolism, Mitochondria and Muscle*  
Toshihiko OGURA  
Tohoku University, Japan

1615 – 1630

*Airway smooth muscle cells form oriented bands on 3D tubular micropatterns mimicking the ontogenesis of bronchial smooth muscle tissue structures*  
Linhong DENG (Inv)  
Institute of Biomedical Engineering & Health Sciences, China

*Mechanical memory in collective cell migration*  
Amit PATHAK (Inv)  
Washington University in St. Louis, USA

*Sugar chain structure essential for protecting muscle cell membrane damage from physical stress*  
Motoi KANAGAWA (Inv)  
Kobe University, Japan

1630 – 1645

*Remodeling of adhesion and modulation of mechanical tensile forces during apoptosis in Drosophila epithelium*  
Xiang TENG  
Mechanobiology Institute, Singapore

*Three-dimensional single cell active elastography*  
Farid ALISAF AEI  
University of Pennsylvania, USA

*Unloading induces reactive oxygen species associated signal transduction toward atrophy in skeletal muscle cells*  
Takeshi NIKAWA (Inv)  
Tokushima University, Japan

1645 – 1700

*Desmosomal coupling influences force-driven tissue dynamics in steady state and apoptotic junctions*  
Minnah THOMAS  
Mechanobiology Institute, Singapore

*Effects of Advanced Glycation End-products on the Mechanobiology of the Intervertebral Disc*  
Simon TANG (Inv)  
Washington University in St. Louis, USA

*Cardiac reprogramming and heart regeneration via mechano-transduction*  
Masaki IEDA (Inv)  
Keio University, Japan

1700 – 1715

*Polarity dynamics of epithelial trains during initiation and maintenance of directed collective cell migration*  
Shreyansh JAIN  
Mechanobiology Institute, Singapore

*Mechanisms of Plastic Deformation in Collagen Networks Induced by Cellular Forces*  
Vivek SHENOY (Inv)  
University of Pennsylvania, USA

*Intravascular pressure restricts angiogenesis through mechanical stretching of endothelial cells*  
Shigetomo FUKUHARA (Inv)  
Nippon Medical School, Japan

1900 – 2100

**Conference Banquet**

Venue: Gardens by the Bay  
Sponsored by: Corporate Sponsors

0830 – 0915

**Plenary Lecture 7**

(UTown Auditorium 1)

*Engineering Microsystems for Quantitative Mechanobiology*

**Beth PRUITT, Stanford University, USA**

*Chair: C.T. LIM, Mechanobiology Institute, Singapore*

0915 – 1000

**Plenary Lecture 8**

(UTown Auditorium 1)

*Adherens junction components stabilize the polarity of migrating cells via Myosin-II Regulation*

**Masatoshi TAKEICHI, RIKEN Centre for Development Biology, Japan**

*Chair: Yusuke TOYAMA, Mechanobiology Institute, Singapore*

1000 – 1030

**Coffee Break**

(Level 2)

1030 – 1200

**Session 4-1**  
(UTown Auditorium 1)

**Special Session - Vinculin: a mechanoresponsive component of multiple cell adhesion machineries**

*Organizers & Session Chairs:*  
Noriyuki KIOKA, Kyoto University, Japan  
Hiroaki HIRATA, Nagoya University, Japan

**Session 4-2**  
(Global Learning Room)

**Membranes**

*Session Chairs:*  
Bianxiao CUI, Stanford University, USA  
Xiaohui (Frank) ZHANG, Lehigh University, USA

**Session 4-3**  
(Seminar Rooms 7 & 8)

**Special Session - Mechanosensitive ion channels**

*Organizer:*  
Xiaoqiang YAO, Chinese University of Hong Kong, Hong Kong  
*Session Chairs:*  
Xiaoqiang YAO, Chinese University of Hong Kong, Hong Kong  
Jing LI, Guangzhou University of Chinese Medicine, China

1030 – 1100

**Keynote Lecture**

*The role of vinculin in coordinating the adhesion network*  
**Christoph BALLESTREM**  
University of Manchester, UK

**Keynote Lecture**

*The role of membrane curvature for mechanosensing at the nano-bio interface*  
**Bianxiao CUI**  
Stanford University, USA

**Keynote Lecture**

*Mechanosensitive TRP channels in cardiovascular system*  
**YAO Xiaoqiang**  
The Chinese University of Hong Kong, Hong Kong

1100 – 1115

*Force-dependent binding of vinculin to talin, alpha-catenin, and alpha-actinin 1*  
**Jie YAN (Inv)**  
Mechanobiology Institute, Singapore

*Force-dependent integrin endocytosis at the podosome*  
**Cheng-Han YU**  
University of Hong Kong, Hong Kong

*Critical role of Piezo1 in vascular biology*  
**Jing LI (Inv)**  
Guangzhou University of Chinese Medicine, China

1115 – 1130

*Vinculin and vinexin family (SORBS) proteins in mechanosensing and mechanotransduction*  
**Noriyuki KIOKA (Inv)**  
Kyoto University, Japan

*Interplay between caveolae and junctional mechanics*  
**Jessica Li Chang TEO**  
University of Queensland, Australia

*Precise ultrasonic neuron stimulation*  
**Lei SUN (Inv)**  
Hong Kong Polytechnic University, Hong Kong

1130 – 1145

*Nanoscale architecture of cadherin-mediated adhesion*  
**Cristina BERTOCCHI (Inv)**  
Mechanobiology Institute, Singapore

*Self-organization of clathrin mediated endocytosis into spatiotemporal waves and the onset of cortical patterning*  
**Yang YANG**  
Mechanobiology Institute, Singapore

*MscL-based ultrasonic control of neural activity*  
**Yuezhou LI (Inv)**  
Zhejiang University, China

1145 – 1200

*Force- and rigidity-sensing by talin and vinculin at focal adhesions*  
**Hiroaki HIRATA (Inv)**  
Nagoya University, Japan

*Mechanotransduction of the endothelial glycocalyx mediates nitric oxide production through activation of TRP channels*  
**Xiaohui (Frank) ZHANG**  
Lehigh University, USA

*Coarse grained molecular dynamics simulation of mammalian mechanosensitive ion channel TRPV2*  
**Ken TAKAHASHI (Inv)**  
Okayama University, Japan

December 14, 2017

1200 – 1230

**Special Lecture**

(UTown Auditorium 1)

*'Force-from-lipids' principle of mechanosensing at the membrane interface*

**Boris MARTINAC, Victor Chang Cardiac Research Institute, Australia**

*Chair: Masahiro SOKABE, Nagoya University, Japan*

1230 – 1300

**Poster Awards & Closing Ceremony**

(UTown Auditorium 1)

1300 – 1400

**Lunch**

(MBI)

1400 – 1600

**Tour of MBI**

## Special Sessions

Session	Session Name	Organizer
1-9	Mechanobiology of nuclear and chromatin deformations: Implications for gene expression	Sam SAFRAN, Weizmann Institute of Science, Israel
2-3	Mechanobiology in fibrosis related diseases	Ming-Jer TANG, National Cheng Kung University Medical College, Taiwan
2-6	Single-molecule force spectroscopy, mechanosensing, and immunomechanobiology	Xiaohui (Frank) ZHANG, Lehigh University, USA
2-9	Cancer Mechanobiology	Michael R. KING, Vanderbilt University, USA
3-2	AMED-CREST/PRIME Special Session I - Molecular Mechanisms of Cell Mechanosensing	Masahiro SOKABE, Nagoya University, Japan Kimiko YAMAMOTO, The University of Tokyo, Japan
3-3	Sarcomere-like organization and dynamics in fibroblasts and beating cardiomyocytes	Sam SAFRAN, Weizmann Institute of Science, Israel
3-5	Innovation and new technologies for mechanobiology	Guy GENIN, Washington University in St. Louis, USA Vivek SHENOY, University of Pennsylvania, USA
3-6	Diversity of Mechanosensitive Ion Channels in Eukaryotes	Boris MARTINAC, Victor Chang Cardiac Research Institute, Australia
3-8	Cell-ECM Interactions	Guy GENIN, Washington University in St. Louis, USA Vivek SHENOY, University of Pennsylvania, USA
3-9	AMED-CREST/PRIME Special Session II - Mechanobiology of muscles and blood vessels	Masahiro SOKABE, Nagoya University, Japan Toshihiko OGURA, Tohoku University, Japan
4-1	Vinculin: a mechanoresponsive component of multiple cell adhesion machineries	Noriyuki KIOKA, Kyoto University, Japan Hiroaki HIRATA, Nagoya University, Japan
4-3	Mechanosensitive ion channels	Xiaoqiang YAO, Chinese University of Hong Kong, Hong Kong