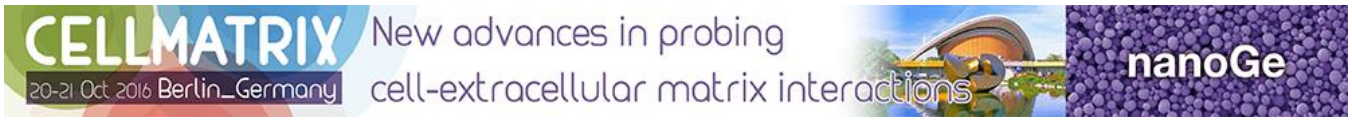

International Conference

New Advances in Probing Cell-Extracellular Matrix Interations (CellMatrix)

Berlin, Germany, 20-21 October 2016

Chairs: Sapun Parekh, Ovijit Chaudhuri and Allen Liu

Conference Program

October 20th – Day 1 Thursday	
7.30-8.45 Registration	
8.45-9.00 Opening	
	General Session G1 **Chair: Allen Liu**
09.00 G1.I1	Daniel Fletcher *(UC Berkeley)* Feel the force: Measuring actin filament stresses in live cells
09.30 G1.I2	Viola Vogel *(ETH Zürich)* Nanoprobes to decipher the mechanobiology of extracellular matrix
10.00 G1.O1	George Duda *(Charité - Universitätsmedizin Berlin)* Mechano-biological interplay between cells and ECM shapes tissue regeneration
10.30	**Coffee Break**
	General Session G1 **Chair: Allen Liu**
11.00 G1. I3	Joachim Spatz *(MPI for Medical Research)* Mechanotransduction in collective cell migration
11.30 G1. I4	Beth Pruitt *(Stanford University)* Engineering systems for mechanobiology
12.00 G1.I5	Benoit Ladoux *(CNRS and NUS)* Epithelial gap closure governed by forces and geometry
12.30	**Lunch Time**
	General Session G1 **Chair: Shelly Peyton**
14.00 G1.O2	Wesley Legant *(HHMI)* Lattice light sheet microscopy: imaging molecules, cells, and embryos at high spatiotemporal resolution

14.15 G1.O3	Brenton Hoffman *(Duke University)* Rationally designed FRET-based molecular tension sensors
14.30 G1.O4	Ariella Shikanov *(University of Michigan)* Engineering the follicle environment
14.45 G1.O5	Jordi Alcaraz *(Universitat de Barcelona)* Aberrant mechanobiology of tumor associated fibroblasts from lung cancer patients
15.00 G1.O6	Katrina Wisdom *(Stanford University)* Extracellular matrix malleability regulates breast cancer cell invasion
15.15 G1.O7	Galja Pletikapic *(FOM Institute AMOLF)* Collagen – hyaluronan biomimetic hybrid networks with embedded fluorescent force sensors
15.30 G1.O8	Frederik Fleissner *(Max Planck Institute for Polymer Research)* Microspectroscopy of intermediate filament secondary structure under load
15.45 G1.O9	Marie-Mo Vaeyens *(Biomechanics Section, KU Leuven)* Quantification of acto-myosin induced matrix deformations around angiogenic sprouts
16.00 G1.O10	Kandice Tanner *(NCI/NIH)* Real-time visualization of early metastasis events in Danio rerio
16.15	**Afternoon break**
16.45	**Flash talks and poster session**
20:00	**Social dinner**

October 21st - Day 2 Friday

	General Session G2 **Chair: Ovijit Chaudhuri**
08.30 G2.I1	David Mooney *(Harvard University)* Viscoelasticity: cell populations to single cells
09.00 G2.I2	Jennifer Elisseeff *(Johns Hopkins University School of Medicine)* Synthetic and natural extracellular matrix Scaffolds for regenerative medicine: design, mechanisms of action, and translation
09.30 G2.I3	Andrea Manfrin *(Ecole Polytechnique Fédéral de Lausanne)* Engineering stem cell pattering
10.00 G2.I5	Dennis Discher *(University of Pennsylvania)* Lessons from the first days of the first organ: from matrix stiffness to the nuclear lamina
10.30	**Coffee break**
	General Session G2 **Chair: Sapun Parekh**
11.00 G2. I4	Hari Shroff *(NIH)* Mechanochemical regulation of macrophages by the adhesive microenvironment

11.30 G2. I5	Ilaria Testa *(KTH, SciLifeLab)* RESOLFT super resolution microscopy in brain tissues
12.00 G2.I6	Michael Sixt *(IST Austria)* Load-adaptation of lamellipodial actin networks
12.30	**Lunch time**
	General Session G2 **Chair: Jordi Alcaraz**
14.00 G2.O1	Wendy Liu *(University of California Irvine)* Mechanochemical regulation of macrophages by the adhesive microenvironment
14.15 G2.O2	Matthew Paszek *(Cornell University)* The mechanobiology of the cellular glycocalyx
14.30 G2.O3	Shelly Peyton *(UMass Amherst)* Synthetic environments to understand cancer metastasis and drug resistance
14.45 G2.O4	Jennifer Young *(Max Planck Institute)* Nanoscale cell-ECM interactions influence chemoresistance
15.00 G2.O5	Jan Stegemann *(University of Michigan)* Microscale mechanobiology of extracellular matrices using advanced ultrasound techniques
15.15 G2.O6	Kenneth K.Y. Ho *(Mechanical Engineering, University of Michigan)* A microfluidic pipette array and compression device for aspiration and compression studies
15.30 G2.O7	Seraphine Wegner *(Max Planck Institut for Polymer Research)* Photoswitchable linkers for cell and protein patterning
15.45 G2.O8	James Spurlin *(Chemical & Biological Engineering, Princeton University)* Extracellular matrix composition directs airway epithelial branching through focal adhesion kinase
16.00 G2.O9	Alberto Elosegui-Artola *(IBEC)* Force application to the nucleus is sufficient to trigger YAP nuclear entry
16.15 16.45	**Closing**

Poster Contribution

October 20th – Day 1 Thursday	
16.45-19.00 Poster session	
4308	Filipe Almeida *(Centre for Cell Biology and Cutaneous Research, Queen Mary, University of London)*, John Connelly Development of a high-throughput cell migration assay using dynamically adhesive micro-patterned substrates
4428	Min Bao *(Radboud University)*, Jing Xie, Stéphanie Bruekers, Wilhelm Huck Designing an artificial 3D microenvironment for probing geometrical cues influencing stem cell fate
4298	Chiara Tamiello, Frank Baaijens, Carlijn Bouten *(Eindhoven University of Technology)* Differential response of basal and cap actin fibers to combined topographical cues and cyclic uniaxial strain
4313	Spencer Crowder *(Imperial College London)*, Catherine Hansel, Sahana Gopal, Ciro Chiappini, Molly Stevens Biophysical interactions of primary human cells and porous silicon nanoneedles
4402	Edna George *(Indian Institute of Technology Bombay)*, Amlan Barai, Shamik Sen Adhesivity modulates cell mechanics on in vivo mimetic methacrylated gelatin gels
4405	Jenna Graham *(Laboratory of Applied Mechanobiology, Department of Health Sciences and Technology, ETH Zurich)*, Nikhil Jain, Denis Wirtz, Viola Vogel Confounding effects of macromolecular crowding and extracellular matrix on fibroblast proliferation
4425	Hatice Imran Gungordu *(Department of Biomaterials, Radboud University Medical Center)*, X. Frank Walboomers, John A. Jansen Following the leader: mechanical loading or stiffness sensing?
4422	Asja Guzman *(Columbia University)*, Oh Sang Kweon, Laura J. Kaufman Functional impact of blebs in a novel alternative cancer 3D invasion mode.
4307	Tommy Heck *(Biomechanics Section, Department of Mechanical Engineering, KU Leuven)*, Bart Smeets, Herman Ramon, Paul Van Liedekerke, Hans Van Oosterwyck Computational model of cell migration through a viscoelastic extracellular matrix by local degradation and filopodia-based traction forces
4303	Andrew Holle *(Max Plank Institute for Medical Research)*, Ralf Kemkemer, Joachim Spatz Confined cancer cell invasion is dependent on the physical properties of the extracellular matrix
4426	Alicia Izquierdo-Alvarez *(KULeuven)*, Alvaro Jorge-Peñas, Diego A. Vargas, Ramesh Subramani, Srilakshmi Ragunathan, Hans Van Oosterwyck Correlation between cell morphology, tractions and motility of endothelial cells on compliant substrates
4430	Josef Jaros *(Masaryk Universit)*, Michal Petrov, Marketa Tesarova, Ales Hampl 3D ultrastructure and morphology of stem cell spheroids by SBF-SEM

4446	Anna A. Kim *(Chalmers University of Technology)*, Haijiang Zhang, Shijun Xua, Gavin D. M. Jeffriesa , Aldo Jesorkaa Directed protrusion growth: communication and critical length-scales
4421	Zuzana Koledova *(Masaryk University)* Investigating regulation of mammary epithelial morphogenesis by ECM remodeling
4302	Nicholas A. Kurniawan *(Eindhoven University of Technology)* Tracing cell fate and decision-making to local, dynamic cell–matrix mechanical interactions
4423	Wontae Lee *(McGill University)*, Rahul K. Singh, Andrew J. Putnam, Shuichi Takayama, Richard L. Leask, Christopher Moraes Mapping cell forces within 3D tissue engineered spheroid cultures using dispersible hydrogel mechanosensors
4424	Aline Lueckgen *(Julius Wolff Institute & Center for Musculoskeletal Surgery)*, Daniela Garske, Rajiv M. Desai, Peter Fratzl, David J. Mooney, Georg N. Duda, Amaia Cipitria Hydrolytically-degradable click alginate hydrogels
4431	Danahe Mohammed *(Mechanobiology & Soft Matter group, Research Institute for Biosciences, University of Mons)*, Guillaume Charras, Sylvain Gabriele The dynamic mechanical adaptation of keratocytes squeezed on 2D micropatterns
4416	Stephanie Mok *(Chemical Engineering, Mcgill University)*, Katherine Macdonald, Sarah Dubois, Wontae Lee, Richard L Leask, Christopher Moraes Measuring local 3D tissue stiffness using microengineered smart material probes
4296	Vignesh Murugesan *(Lund University)*, Anna Hultgardh Nilsson, Uwe Rauch Beta–sarcoglycan deficiency displays reduced atherosclerotic plaque development in ApoE-null mice
4297	Roger Oria *(Institute for Bioengineering of Catalonia)*, Tina Wiegand, Jorge Escribano, Alberto Elosegui-Artola, Juan Jose Uriarte, Daniel Navajas, Xavier Trepat, José Manuel García-Aznar, Elisabetta Ada Cavalcanti-Adam, Pere Roca-Cusachs Force loading explains how substrate rigidity and ligand nano-distribution regulate cell response
4412	Stefania Pagliari *(Center for Translational Medicine (CTM),International Clinical Research Center (ICRC))*, Vladimir Vinarsky, Ana Rubina Perestrelo, Fabiana Martino, Giancarlo Forte YAP/TAZ mechanosensors as determinants of cardiac cell maturation and function
4314	Ruben Pereira *(University of Porto)*, Aureliana Sousa, Cristina Barrias, Pedro Granja*, Paulo Bártolo Effect of physicochemical properties and peptide ligands on fibroblasts embedded in dual crosslinked pectin hydrogels for skin repair
4419	Ana Rubina Perestrelo *(Center for Translational Medicine, International Clinical Research Center (CTM-ICRC))*, Vladimír Vinarský, Jorge Oliver de la Cruz, Víta Žampachová, Stefania Pagliari, Vladimír Horváth, Diana S. Nascimento, Perpétua Pinto-do-Ó, Giancarlo Forte Decellularized extracellular matrices to dissect the contribution of mechanosome to cardiac pathologies
4082	Mischa Schwendy *(Max Planck Institut für Polymerforschung)*, Mischa Bonn, Ronald E. Unger, Sapun Parekh Scaffold mechanics modulates lipid uptake in THP-1 derived macrophages in 3D matrices
4295	Jenna M. Shapiro *(University of Cambridge)*, Michelle L. Oyen, Constantine A. Stratakis Protein Kinase A Subunit

	Response to Hydrogel Substrates
4404	Lakshmi Kavitha Sthanam *(Department of Biosciences and Bioengineering)*, Shamik Sen Mouse embryonic fibroblast derived matrices regulate fate and genomic integrity of mouse embryonic stem cells
4418	Taíla O. Meiga, Alvaro Jorge-Peñas, Susanna Piluso, Jennifer Patterson, Hans Van Oosterwyck *(KULeuven)* Influence of actin stress fibers on endothelial cell dynamics
4366	Medhavi Vishwakarma *(Max Planck Institute for Medical Research)*, Tamal Das, Joachim Spatz Group Decisions influence emergence and regulation of leaders during collective migration of epithelial cells
4427	Maike Werner *(Eindhoven University of Technology)*, Nicholas Kurniawan, Ansgar Petersen, Carlijn Bouten Geometry-guided cell migration on competing length scales
4429	Jing Xie *(Radbound University)*, Min Bao, Wilhelm Huck Local microenvironment of collagen gels drives cell spreading through cell-fiber interactions
4294	Simge Yuz *(MPI-P Mainz)* Re-programming cell contacts