

Tuesday - September 22, 2020

- 11:00 - 13:00 *Conference check-in and on-site registration*
- 13:00 – 13:15 *Opening / Welcome Words*
- 13:15 – 13:45 The mechano-chemical regulation of brain development and disease
Kristian Franze *University of Cambridge, United Kingdom*

Session I

- 13:45 – 14:15 Impact of microtubule acetylation on mechanosensitive migration
Sandrine Etienne-Manneville *Institut Pasteur, France*
- 14:15 – 14:30 Biomechanics of primary hippocampal neurons and SH-SY5Y cells in oxygen and glucose deprivation (OGD) model
Tomasz Zielinski *Polish Academy of Sciences, Poland*
- 14:30 – 15:00 Dissecting asymmetric division of Drosophila neural stem cells by chemical genetics
Jens Januschke *University of Dundee, United Kingdom*
- 15:00 – 15:30 *Coffee break*

Session II

- 15:30 – 16:00 YAP mechanosensing in the nucleus
Allen Ehrlicher *Mc Gill University, Canada*
- 16:00 – 16:15 EMT-induced cell-mechanical changes enhance mitotic Rounding strength
Kamran Hosseini *TU Dresden, Germany*
- 16:15 – 16:45 How does the extracellular matrix affect the rigidity of an embedded spheroid?
Jennifer M. Schwarz *Syracuse University, USA*
- 16:45 – 17:15 Anomalous phase separation in co-cultures of cells with different mechanical properties
Moumita Das *Rochester Institute of Technology, USA*

Wednesday - September 23, 2020

Session III

- 09:00 - 09:30 Investigating the role of the biomechanical microenvironment in determining response to anti-brain cancer therapies
Geraldine O'Neill *The University of Sydney, Australia*
- 09:30 – 09:45 Intermediate filament heterogeneity and its role in the mechanics of glioblastoma invasion
Emma van Bodegraven *Institut Pasteur, France*
- 09:45 - 10:15 *Coffee break*
- 10:15 – 10:45 Confined cell migration - a dynamical systems perspective
Chase Broedersz *LMU Munich, Germany*
- 10:45 – 11:00 Optoregulated force application to individual cellular receptors using molecular motors
Mitchell Han *INM-Leibniz Institute for New Materials, Germany*
- 11:00 – 13:00 *Lunch break*
- 13:00 – 15:30 **Virtual Poster Session**
Young Scientist Awards

Session IV

- 15:30 – 16:00 Viscoelastic properties of the isolated but metabolically intact nucleus
Paul Janmey *University of Pennsylvania, USA*
- 16:00 – 16:30 Physical targeting strategies for enhanced therapeutic efficacy: bridging physics and biology through rational design
Sara Nizzero *Houston Methodist Hospital, USA*
- 16:30 – 16:45 Elevation of keratin levels in reconstituted actin-keratin filament networks gradually increases their stress responsiveness
Iman Elbalasy *Leipzig University, Germany*
- 16:45 – 17:15 Control of cell shape by vimentin intermediate filaments
Alison E. Patteson *Syracuse University, USA*
- 17:15 – 17:45 Traction-independent cellular flows in cell aggregates
Michael Murrell *Yale University, USA*

Thursday - September 24, 2020

Session V

- 09:00 – 09:30 Microtubules are sensory elements mediating feedback from integrin adhesions to the actomyosin cytoskeleton
Alexander Bershadsky *National University of Singapore, Singapore*
- 09:30 – 10:00 Heterogeneity and plasticity of migratory cell behaviours
Alexandre Kabla *University of Cambridge, United Kingdom*
- 10:00 – 10:15 Non-monotonic relation between cell speed and density in expanding 2D epithelia
Maxime Hubert *University of Erlangen-Nuremberg, Germany*
- 10:15 – 10:45 Active nematic behavior of epithelial systems: a role in cell extrusion and cell sorting
Benoit Ladoux *National University of Singapore, Singapore*
- 10:45 – 11:15 Coffee break

Session VI

- 11:15 – 11:45 How to interact: Investigation cell-substrate adhesion as a prerequisite to study tissue mechanics ex vivo
Mareike Zink *Leipzig University, Germany*
- 11:45 – 12:15 Nanofibrous biopolymer scaffolds - from molecular mechanisms to new biomaterials
Dorothea Brüggemann *University of Bremen, Germany*
- 12:15 – 12:30 Rapid modulation of filament mechanics by charge modifications
Julia Kraxner *University of Göttingen, Germany*
- 12:30 – 13:30 Lunch buffet

Session VII

- 13:30 – 14:00 Jamming transitions of collective cancer cell invasion in 3D tissue
Peter Friedl *Radboud University, The Netherlands*
- 14:00 – 14:30 Growth mechanics - coexistence and evolution
Jens Elgeti *Forschungszentrum Jülich, Germany*

14:30 – 14:45 Synchronization of cellular forces in spheroids from primary breast tumor-associated mesenchymal cells
David Böhringer *Friedrich-Alexander University Erlangen-Nuremberg, Germany*

14:45 – 15:15 Virtual fluidic channels: single cell rheology and tissue mechanics
Oliver Otto *University of Greifswald, Germany*

15:15 – 15:45 Coffee break

Session VIII

15:45 – 16:15 Using CRISPR and TIRFM to Interrogate the in vivo Dynamics of Protein Complexes with Single Molecule Sensitivity
Ian G. Macara *Vanderbilt University, USA*

16:15 – 16:30 Multiscale analysis reveals distinct cancer cell responses to environmental cues
Wolfgang Losert *University of Maryland, USA*

16:30 – 17:00 Integrating evolutionary mathematical models into cancer therapy to increase the probability of control and cure
Robert Gatenby *Moffitt Cancer Center, USA*

17:00 – 17:30 Direct evidence that tumor cells soften when navigating confined spaces
Sanjay Kumar *University of California, Berkeley, USA*

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