

2nd Theodore von Kármán –

Discussion Conference on Materials for Life

Bioinspired and Biomimetic Hydrogels

April 15 - 18, 2018 Kardinal Schulte Haus, Bergisch Gladbach, Germany

Sunday, April 15, 2018		
14:00	Arrival, Registration, Welcome + Coffee break	
I. Mechanosensing of Cells		
16:30	Dennis Discher Biophysical Engineering Lab, University of Pennsylvania, USA	Matrix elasticity effects in living tissue -- nuclear readouts
17:00	Dror Seliktar Biomedical Engineering, Technion University, Israel	A gel-based model of selective cell motility involving chemotaxis, haptotaxis and durotaxis: implications for cell sorting, diagnostics and screening
17:30	Benjamin Geiger Molecular Cell Biology, Weizmann Institute of Science, Rehovot, Israel	The mechanobiology of cancer cell invasion
18:00	Virgil Percec Department of Chemistry, University of Pennsylvania, USA	Reconstructing the glycan of biological cells
19:00	Dinner	
20:30	James Fawcett Department of Clinical Neurosciences, University of Cambridge; UK	Interfacing with the peripheral nervous system
Monday, April 16, 2018		
II. Dynamic Systems to control Stem Cell Fate		
9:00	Matthias Lutolf Laboratory of Stem Cell Engineering, Switzerland	Hydrogels for controlling organoid development
9:30	Cole DeForest Chemical Engineering, University of Washington, USA	Logical breakdown: encoding boolean-based degradative responsiveness into synthetic biomaterials
10:00	Britta Trappmann Max Planck Institute for Molecular Biomedicine, Münster, Germany	Biomimetic hydrogels to study cellular mechanotransduction
10:30	Coffee Break	
III. Dynamic Crosslinks inside Hydrogels		
11:30	Sarah Christine Heilshorn Materials Science and Engineering, Stanford University, USA	Dynamic matrices for stem cell expansion, transplantation, and 3D printing
12:00	Ovijit Chaudhuri Department of Mechanical Engineering, Stanford University, USA	Extracellular matrix viscoelasticity and its impact on cells

12:30	Sanjay Kumar Chemical and Biomolecular Engineering, University of California, Berkeley, USA	Dissecting the dynamics of mechanosensitive lineage commitment with temporally engineered materials
13:00	Lunch Break	
IV. Carriers		
14:30	Joachim Spatz Cellular Biophysics, Max Planck Institute for Medical Research, Heidelberg, Germany	Sequential bottom-up assembly of synthetic cells
15:00	Avi Schroeder Chemical Engineering, Technion University, Israel	Barcoded nanoparticles for predicting the personalized response to cancer medicines: a view of the tumor microenvironment and metastasis
15:30	Takuzo Aida Department of Chemistry and Biotechnology, University of Tokyo, Japan	Smart soft materials fabricated under nonequibrated conditions
16:00	Martin Möller DWI - Leibniz Institute for Interaktive Materials e.V., Aachen Germany	Actuated hydrogels
16:30	Rapid Fire Talks Posters	
17:00	Coffee break – Poster Session	
19:00	Dinner	
20:30	Evening Activity	
Tuesday, April 17, 2018		
V. Active Function in Synthetic Structures		
9:00	Peter Seeberger Max-Planck-Institut für Kolloid- und Grenzflächenforschung, Potsdam, Germany	Materials made from synthetic oligo- and polysaccharides
9:30	Sergei Sheiko Department of Chemistry, University of North Carolina, USA	Solvent-free biogels
10:00	Rapid Fire Talks Posters	
12:00	Lunch Break	
VI. Therapeutic Hydrogels		
13:30	Carsten Werner Institute of Biofunctional Polymer Materials, Leibniz-Institut für Polymerforschung Dresden e.V., Germany	Glycosaminoglycan-hydrogels for in vitro tissue models and regenerative therapies
14:00	José Carlos Rodríguez Cabello BIOFORGE, Universidad de Valladolid, Spain	Recombinamer-based dynamic systems
14:30	Paul Kouwer Institute for Molecular Life Sciences, Radboud Universiteit, Nijmegen, NL	Mechanical properties of biomimetic hydrogels
15:00	Coffee break - Poster Session	

VII. Nano –and Micrometer Scale Building Blocks		
17:00	Tatiana Segura Pratt School of Engineering Duke University, Durham, North Carolina, USA	Particle hydrogels for endogenous tissue repair
17:30	Esther Amstad Soft Materials Laboratory SMAL, EPFL Lausanne, CH	Structuring materials with drops
18:00	Hua Ye Institute of Biomedical Engineering, University of Oxford; UK	Fragmented hydrogel for human 3D neural network
19:00	Dinner	
20:30	Monica M. Laronda Northwestern University, Chicago, USA	Engineering a functional bioprosthetic ovary with 3D printed gelatin scaffolds
Wednesday, April 18, 2018		
VIII. Hydrogels for Cell Guidance		
9:00	Aránzazu del Campo Bécares Dynamische Biomaterialien, INM – Leibniz-Institut für Neue Materialien, Saarbrücken, Germany	Addressing cells with optoregulated hydrogels
9:30	Wilfried Weber BIOSS and Institute of Biology II (Biochemistry), University Freiburg, Germany	Optogenetics-inspired hydrogel for controlling mechano-signalling
10:00	Laura De Laporte DWI - Leibniz Institute for Interaktive Materials e.V. Aachen, Germany	Synthetic building blocks for anisotropic tissue regenerative hydrogels
10:30	Coffee Break	
IX. Additive Manufacturing		
11:30	Jürgen Groll Department for functional materials in medicine and dentistry, University of Würzburg, Germany	Hydrogels as Inks for bioprinting
12:00	Mitsuru Akashi Graduate School of Frontier Biosciences, Osaka University, Japan	LbL-3D cells tissue engineering on and/or in hydrogels
12:30	Stefan Jockenhövel AME – Helmholtz Institute for Biomedical Engineering, Aachen Germany	In vitro & in vivo biofabrication of biohybrid cardiothoracic implants
13:00	Lunch Break + Departure	