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RESEARCH CONFERENCE

ESF-EMBO Symposium

Biological Surfaces and Interfaces

Hotel Eden Roc, Sant Feliu de Guixols (Costa Brava) • Spain
June 26 – July 1, 2011

Chair: **Fredrik Höök**, Chalmers, Sweden
Co-Chair: **Janos Vörös**, ETH Zürich Switzerland

Vice-Chairs: **Ralf Richter**, CIC biomaGUNE, Spain
Eva Sinner, BOKU Vienna, Austria

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materials**

Soft Matter

Biological Surfaces and Interfaces

Final Programme

Sunday 26 June	
17:00 onwards	Registration at the ESF Desk
19.00	Welcome Drink
20.00	Dinner

Monday 27 June	
Session 1: Engineering BioInterfaces	
Chaired by: Fredrik Höök	
08:45 – 09:00	Fredrik Höök , Chalmers, SE and Janos Vörös , ETH-Z, CH <i>Welcome and Information</i>
09:00 - 09:45	Andreas Janshoff , Göttingen University, DE <i>Local Membrane Mechanics: From Supported Bilayers to Living Cells</i>
09:45 - 10:30	Catherine Picart , Grenoble-Institute of Technology and CNRS, FR <i>Engineering of Layer-by-Layer Films to Control Cell Differentiation</i>
10.30 - 11.00	Coffee Break
11.00 - 11.45	Stefan Zauscher , Duke University, Durham, US <i>Surface-Tethered (Bio)Macromolecular Nanostructures for Nanomechanical Sensing and Novel Detection Platforms</i>
11:45 - 12.30	Matthias Lutolf , EPFL Lausanne, CH <i>Engineering Stem Cell-Niche Interfaces</i>
12:30	Lunch and Free Time
15.45 - 16.15	Coffee Break
Session 2: Cells at Interfaces	
Chaired by: Janos Vörös	
16.15 - 17.00	Mattis Riehle , University of Glasgow, UK <i>Engineering cellular function in 2 and 3D</i>
17.00 - 17.45	Joachim Rädler , Ludwig-Maximilians-Universität Munich, DE <i>Lipid Coats for siRNA, Silica Nanoparticles and Addressable Single Cell Assays</i>
18.00 - 18.45	Rafi Korenstein , Tel Aviv University, IL <i>Nanoscale Fluctuations of the Cell Membrane</i>
19.00 - 20.30	Dinner
20.30 - 21.30	Key Note Lecture I , chaired by: Marcus Textor Buddy Ratner , University of Washington, US <i>Blood Compatibility Driven by the Biointerface: Old Ideas</i>
21.30	Poster Session I

Tuesday 28 June	
Session 3: Nanomedicine Chaired by: Eva Sinner	
09.00 - 09.45	Ole Mouritsen , MEMPHYS - Center for Biomembrane Physics, University of Southern Denmark, DK <i>Lipids and Liposomes for Nano-Medicine</i>
09.45 - 10.30	Brigitte Städler , Aarhus University iNano, DK <i>Subcompartmentalized Systems for Cell Mimicry and Drug Delivery</i>
10.30 - 11.00	Coffee Break
11.00 - 11.45	Tanja Weil , Ulm University, DE <i>Protein-derived Copolymers as Biocoatings and for Drug Delivery Applications</i>
Short Oral Presentations: Chaired by: Eva Sinner	
11.45 - 12.00	Derda Ratmir, University of Alberta, US <i>High-throughput Assembly and Analysis of 3D cultures using Cells in Gels in Paper</i>
12.00 - 12.15	Jennifer Saik, Rice University, US <i>Rapid Anastomosis between Encapsulated Cells in Hydrogels and Host Vasculature</i>
12.15 - 12.30	Yajun Weng, Southwest Jiaotong University, CN <i>Immobilization of Bioactive Molecule on TiO₂ for in situ Catalytic Generation of Nitric Oxide</i>
12.30	Lunch and Free Time
15.45 - 16.15	Coffee Break
Session 4: Sponsor Presentations Chaired by: Fredrik Höök	
16.15 - 16.30	Biolin Scientific - Presented by Vijay Gupta <i>Leading Provider of Analytical Instruments for the Nano-Scale and Molecular Study of Interfaces and Interaction on Surfaces</i>
16.30 - 16.45	Microvacuum - Presented by Istvan Szendro <i>Label Free Optical Biosensors Combined with Electrical Measurements</i>
16.45 - 17.00	JPK Instruments AG - Presented by Carmen Pettersson <i>A Force Toolkit for Cell and Molecular Research</i>
17.00	Poster Session I cont. and Drinks Reception <i>Courtesy of JPK Instruments AG</i>
	
19.00 - 20.30	Dinner
20.30 - 21.30	Key Note Lecture II , chaired by Helmuth Moehwald Marcus Textor , ETH Zürich, CH <i>Self-assembly of Functional Polymers to Interfaces for Applications in Biology and Medicine</i>
21.30	Poster Session I cont. and II starting

Wednesday 29 June	
Session 5: Lipid-Based Biointerfaces	
Chaired by: Catherine Picart	
09.00 - 09.45	Claudia Steinem , Göttingen University, DE <i>Pore-Spanning Membranes: Generating Functional Nanocompartments</i>
09.45 - 10.30	Paul Cremer , Texas A&M University, US <i>Detecting Biomolecules by Local pH Modulation</i>
10.30 - 11.00	Coffee Break
11.00 - 11.45	Nam-Joon Cho , Stanford University, US <i>Viral Peptide Isolated from the Hepatitis C Virus (HCV): Interactions with Lipid Assemblies and Biotechnological Applications</i>
Short Oral Presentation:	
Chaired by: Janos Vörös	
11.45 - 12.00	Pablo Dörig , ETH Zurich, CH <i>Single Cell Displacement and Injection: Application of FluidFM Technology</i>
Sponsor Presentations:	
12.00 - 12.15	Nanolane - Presented by Rémi Corso <i>SARFUS : Access to the Nanoworld Simply with a Reflection Optical Microscope</i>
12.15 - 12.30	LayerLab - Presented by Olof Anderssen <i>Resonance Enhanced Impedance Measurements of Lipid Bilayer Formation and Ion-channel Mediated Charge Transport</i>
12.30	Lunch
14.00	Excursion - Guided Tour of Sant Feliu de Guixols
19.00 - 20.30	Dinner
20.30 - 21.30	Key Note Lecture III , chaired by Buddy Ratner Helmuth Moehwald , Max Planck Institute of Colloids and Interfaces, DE <i>From Peptide-Membrane Interactions to Remote Release</i>
21.30	Poster Session II cont. and Open Bar <i>Courtesy of LayerLab</i>



Thursday 30 June	
Session 6: Small-Scale Analysis Chaired by: Andreas Janshoff	
09.00 - 09.45	Toshio Ando , Kanazawa University, Kanazawa, JP <i>Direct and Dynamic Visualization of Protein Molecules in Action by High-Speed AFM</i>
09.45 - 10.30	Christian Eggeling , MPI Göttingen, DE <i>Studying the Membrane with STED Fluorescence Nanoscopy</i>
10.30 - 11.00	Coffee Break
11.00 - 11.45	Peter Sjövall , Technical Research Institute of Sweden, SE <i>Molecular Mapping of Biological Surfaces and Interfaces with TOF-SIMS</i>
11.45 - 12.30	Jongyoon Han , MIT, US <i>Microfluidic Tools for Single Cell Measurement and Activation</i>
12.30	Lunch and Free Time
15.45 - 16.15	Coffee Break
Session 7: Short Oral Presentations Chaired by: Ralf Richter	
16.15 - 16.30	Maxim Nikitin, Prokhorov General Physics Institute of Russian Academy of Sciences, RU <i>Self-Assembly of Multifunctional Structures and Novel Methods for their Quantitative Detection in Vivo</i>
16.30 - 16.45	Marta Bally, Chalmers University of Technology, SE <i>Interactions of Norovirus Virus-like Particles with Cell-Membrane Mimics Containing Glycosphingolipids</i>
16.45 - 17.00	Sang-Hyun Oh, University of Minnesota, US <i>Template-stripped Smooth Metallic Nanostructures for Microfluidic Biosensing and Spectroscopy</i>
17.00	Poster Session II cont.
19.00 - 20.00	Forward Look Session Chaired by: Ralf Richter Session Panel: Pep Pàmies, Paul Cremer, Marcus Textor, Buddy Ratner, Ole Mouritsen and Claudia Steinem
20.00	Drinks Reception and Conference Dinner

Friday 1 July	
Breakfast and Departure	

List of Posters

SESSION ONE

1	Afanasenkau	Dzmitry	Forschungszentrum Jülich GmbH	Supported lipid bilayers as a substrate for neuronal cell culture
2	Altgärde	Noomi	Chalmers University of Technology	Supported Lipid Membranes as a Platform for Carbohydrate Interactions
3	An	Qi	University of Twente	Immobilization of proteins onto surfaces with supramolecular ways
4	Ardhaoui	Malika	University College Dublin	Functionalised carbon bioelectrode for laccase-catalyzed oxygen reduction by direct electron transfer
5	Attili	Seetharamaiah	Max-Planck-Institute for Metals Research	Forces and mechanical properties of hyaluronan films - A study combining colloidal probe atomic force microscope and reflection interference contrast microscopy
6	Baranova	Natalia	CIC biomaGUNE	Towards the assembly of an artificial cumulus matrix – a study on a surface-based model system
7	Bartosik	Martin	Academy of Sciences of the Czech Republic	Electrochemical detection of RNA using osmium complex as a specific electroactive label
8	Bernecker	Anja	CIC biomaGUNE	Studying the supramolecular interactions of the extracellular matrix components versican and hyaluronan with a surface-based model system
9	Billiet	Thomas	Ghent University	Crosslinking of gelatin matrices for cell encapsulation
10	Blanford	Christopher	University of Manchester	Engineered electrode surfaces for biomimetic attachment of oxygen-reducing enzymes
11	Boltovets	Praskoviya	Institute of semiconductor physics	Layered interfacial architectures on SAM-modified gold surfaces based on macrocyclic Ni(II) complex and biphenyl-4,4'-dicarboxylate
12	Chandrawati	Rona	The University of Melbourne	Capsosomes: Enzyme-Loaded Liposomal Subcompartments within Polymer Carrier Capsules
13	Chen	Junying	Southwest Jiaotong University	Surface biomimetic modification of titanium oxide film by biomolecular immobilization for antithrombogenic and endothelialization
14	Custódio	Catarina	University of Minho	Photopatterned chitosan surfaces for spatially controlled immobilization of different cell types
15	Czolkos	Ilja	Chalmers University of Technology	Micropatterned Teflon AF as a Substrate for Biomaterial Studies
16	De Groot	Wilma	University of Twente	Smart polymer brushes for functionalization of platforms for membrane protein screening
17	De Lange	Victoria	ETH Zurich	A Simple Approach to Array Fabrication: Producing Multiple Biochip Copies from Functionalized Hydrogel Channels
18	Degand	Simon	Université Catholique de Louvain	Design of surfaces with mechanical nano-heterogeneities for a better control of cell-material interactions
19	Dekany	Imre	University of Szeged	Plasmonic Properties of Biofunctionalized Gold/Silver Nanoparticles at different pH in Aquatic Dispersions
20	Dellinger	Antoine	Chimie ParisTech (ENSCP)	A Simple and Versatile Approach to Design Oligoethylene based Self Assembled Monolayer on silicon using Thiolene Chemistry: preparation and surface characterisation

21	Demarche	Sophie	Swiss Federal Institute of Technology (ETHZ)	In-situ reconstitution of proteobilayer in nanopores
22	Dermutz	Harald	ETH Zurich	Physiological neuron networks and their functional capabilities
23	Dielacher	Bernd	Laboratory of Biosensors & Bioelectronics, ETH Zürich	Combining optical and electrical biosensing with novel metal nanowire arrays
24	Eisele	Nico	CIC biomaGUNE	A nanoscopic model system based on a biointerface to investigate the mechanism of transport selectivity in nucleo-cytoplasmic protein exchange
25	Fattinger	Christof	F. Hoffmann-La Roche Ltd	Exploiting Molecular Biology by Time-Resolved Fluorescence
26	Floyd	Alaina	University of Washington	Formation and Characterization of Drug Encapsulated Polymeric Microspheres for Localized Brain Tumor Therapy
27	Fourel	Laure	INP Grenoble	Presentation of BMP-2 from a soft biopolymeric film unveils its activity on cell adhesion and migration
28	Franco	Davide	ETH Zurich	Control of initial endothelial spreading by topographic activation of Focal Adhesion Kinase
29	Gaus	Katharina	University of New South Wales	Spacing of integrin ligands influences signal transduction in endothelial cells
30	Gropeanu	Mihaela Gabriela	Max Planck Institut for Polymer Research	Photosensitive His tags for spatiotemporal control of protein binding to surfaces
31	Gunnarsson	Anders	SP Technical Research Institute of Sweden	Biorecognition at cell membrane surfaces-novel time-resolved assays for kinetic studies of membrane receptor-ligand interactions
32	Gupta	Swati	CIC biomaGUNE	Role of Ca in platelet interactions with foreign surfaces
33	Hanley	Luke	University of Illinois at Chicago	Mass Spectrometric Imaging of Antibiotics and Proteins within Intact Bacterial Biofilms
34	Haylock	David	CSIRO	Perfusion based bioreactors for megakaryocyte growth and platelet production
35	He	Wenxiao	Chalmers University of Technology	Liquid crystal templating of nano-calcium phosphates
36	Hill	Ryan Toler	Duke University	Plasmon Resonant Nanoparticles Coupled to Metal Film as a Biosensing Platform
37	Hortiguela	Maria Jesus	NUI Galway	Monolithic silica columns for environmental monitoring applications
38	Hyötylä	Janne	University of Basel	Synthetic Protein Targeting by the Intrinsic Biorecognition Functionality of Poly(ethylene glycol) using PEG-Antibodies as Biohybrid Molecular Adaptors
39	Inci	Fatih	Istanbul Technical University	Characterization of Tethered Bilayer Lipid Membranes by Quartz Crystal Microbalance-Dissipation (QCM-D)
40	Irbe	Zilgma	Riga Technical University	Cell adhesion behavior on α -tricalcium phosphate Bone Cements
41	Irep	Gozen	Chalmers University of Technology	Fractal Avalanche Ruptures In Biological Membranes
42	Jaatinen	Leena	Tampere University of Technology	Controlling Cell Migration and Adhesion in a Three-dimensional Scaffold by External Electric Currents
43	Jagoda	Agnieszka	University of Basel	Polymer-inorganic composite materials for bone tissue engineering
44	Johnson	Patrick	University of Wyoming	Colloidal SERS Bioassays for Point of Care Diagnostics
45	Kaufmann	Martin	Leibniz Insitute of Polymer Research Dresden	Lipid Bilayers on Responsive Polymer Cushions for Membrane Protein Reconstitution

46	Kluger	Petra	Fraunhofer Gesellschaft	Generation of optimized culture surfaces for primary human cells by (bio)chemical and topographical modifications
47	Kokol	Vanja	University of Mairbor	Interactions between cells and 3D engineered gelatin-based scaffolds
48	Kresak	Slavoj	Max Planck Institute for Biophysics	Giga-seal solvent-free bilayer lipid membranes: from single nanopores to nanopore arrays
49	Kung	Kuan-Chen	National Cheng Kung University	Effects of ordered texture surface with nanometric scale roughness on biological responses for titanium implants
50	Kuvichkin	Vasily	Russian Academy of Sciences (RAS)	Lipid bilayers aggregation and fusion in complexes of DNA- divalent metal cations – zwitterionic liposomes
SESSION TWO				
51	Leal-Egaña	Aldo	University of Leipzig	Does the liver tune elasticity and biodegradability at the cell-matrix interface to control primary tumours?
52	Maiolo	Daniele	University of Brescia	Study of Surface Confined Angiogenic Ligand Receptor Complexes by Contact Angle Molecular Recognition
53	Maniura	Katharina	Swiss federal Institute for Materials Testing and Research	Cell shape versus cytoskeleton integrity: probing the re-expression of the chondrogenic phenotype
54	Matos Ruiz	Mireya	Université Catholique de Louvain (UCL)	Design of biocompatible nanofilms for Nitinol surfaces
55	Meagher	Laurence	Commonwealth Scientific and Industrial Research	Biomedical applications of living, surface initiated polymerisation: a platform approach
56	Messina	Grazia Maria Lucia	University of Catania	Peptide trapping in Nanopores for Antibacterial Surfaces
57	Mhanna	Rami	ETH Zurich	Engineering Cartilage Extracellular Matrix Mimics for Optimal Chondrocyte Culture
58	Montero	Laura	Universitat Ram3n Llull	Initiated Chemical Vapor Deposition (iCVD) of ultrathin thermally responsive films to prevent Biofilm formation
59	Müller	Eike	Leibniz Institute of Polymer Research Dresden	Micropatterning of ECM-inspired Hydrogels
60	Ng	Sher Leen	The University of Melbourne	Polymer Capsules as Drug Delivery Vehicles: Tunable Carrier Degradation and Cargo Release
61	Nilebäck	Erik	Q-Sense	Cytoskeletal rearrangements of fibroblasts measured simultaneously by QCM-D and light microscopy
62	Olsson	Adam, Lars, Johan	University Medical Center Groningen	Acoustic sensing of biocolloid-substrate bond stiffness
63	Ossola	Dario	ETH Zürich	Towards automated force-controlled gigaseal formation for electrophysiology measurements using the FluidFM technology
64	Pribyl	Jan	Masaryk University	Artificial surfaces based on surface-immobilized hyaluronate for controlled adhesion of sperms
65	Rabe	Michael	Chalmers University of Technology	Aggregation of alpha-Synuclein on biological interfaces starts at nanomolar concentrations
66	Renner	Lars David	University of Wisconsin Madison	The Role of Cardiolipin Domains in Protein Localisation in Bacterial Cells
67	Reviakine	Ilya	The University of the Basque Country	Phosphatidyl serine containing liposomes on titania: phase behaviour, bilayer formation, and lipid asymmetry
68	Ribeiro	Nilza	University of Porto	SPARC adsorption on nanophased hydroxyapatite and its influence on MC3T3-E1 osteoblast adhesion and morphology
69	Roguska	Agata	Warsaw University of Technology	Bioactive TiO2 nanotube layers with antibacterial properties

70	Rupert	Deborah	Chalmers Technical University	Microfluidics biosensors for small volume low concentration biosamples: multi-dimensional fluorescence accumulation
71	Santonicola	Mariagabriella	Italian Institute of Technology	Functional supported biomembranes on surface-grafted polymer architectures
72	Shafiq	Zahid	Max-Planck Institute for Polymer Research	DOPA Crosslinked Biopolymers
73	Sharma	Ram	ETH Zurich	Paracrine Interactions between Mesenchymal Stem Cells Affect Substrate Driven Differentiation Toward Tendon and Bone Phenotypes
74	Simonsson	Lisa	Chalmers University of Technology	Lipid vesicle fusion for studies of cell functions
75	Singh	Kulveer	University of Manchester	Inactivation processes of immobilised redox enzymes studied by an electrochemical quartz crystal microbalance
76	Sinner	Eva-Kathrin	BOKU Wien University	Proteins in Plastic
77	Spycher	Philipp	ETH Zurich	Patterning of Supported Lipid Bilayers to Guide Neuronal Cell Growth
78	Stephan	Milena	Georg August Universitaet Goettingen	Development of a Biomembrane Sensor Based on Reflectometry
79	Strancar	Janez	Jozef Stefan Institute	Understanding the cancer-cell's uptake of the nano-sized particles via fluorescence microspectroscopy
80	Sugihara	Kaori	ETH Zurich	Lipids on polyelectrolytes for biosensing and biomaterials
81	Tamura	Atsushi	Tokyo Women's Medical University	Design of stimulus-sensitive cell culture microbeads for large-scale cultivation of therapeutic cells
82	Tejero	Ricardo	Eduardo Anitua Foundation	Blood plasma on TiO ₂ : Time of Flight Secondary Ion Mass Spectroscopy and Principal Component Analysis study
83	Trouche	Elodie	CIC BiomaGUNE	How Activation with Plasma Rich in Growth Factors Influences Immune Response to Titanium Implants
84	Vecbiskena	Linda	Riga Technical University (RTU)	Tricalcium phosphate bone cements: Synthesis, phase composition and in vitro biocompatibility
85	Velez	Marisela	Consejo Superior de Investigaciones Cientificas	Modulating Self Assembly of Bacterial Cytoskeletal Protein FTSZ on Lipid Bilayers
86	Volodkin	Dmitry	Fraunhofer Institut für Biomedizinische Technik	Microfluidic patterning of Layer-by-Layer assembled films for selective cell growth
87	Wall	Gerard	NUI Galway	Regeneration of the inter-vertebral disc region using a targeted gene delivery approach
88	Wasserberg	Dorothee	University of Twente	Orientationally Controlled Immobilization of Visible Fluorescent Proteins
89	Weis	Simone	Max Planck Institute for Polymer Research	Novel caged RGDs for photocontrol of cell attachment to artificial surfaces
90	Westas	Emma	Chalmers University of Technology	Analysis of Staphylococcus epidermidis biofilm formation on nanostructured hydroxyapatite surfaces
91	Willison	Keith Robert	Institute of Cancer Research	Ultrasensitive quantitative proteomics by microfluidic single molecule analysis
92	Yen-Ting	Liu	National Cheng Kung University	Dissection of SAM modified TiO ₂ nano structure and its bioactivity
93	Zambelli	Tomaso	ETH Zurich	FluidFM technology and single-cell biology: from single-virus infection to bacterial adhesion