

Program

- 16:40 – 17:00 **Dr. Maike Windbergs**
Helmholtz Institute for Pharmaceutical Research
Saarland
Bio-adaptive electrospun hybrid fibers for hierarchical three-dimensional cultivation of human cells
- 17:00 **Get-together**

Friday, 23 September 2016

University of Potsdam – Campus Griebnitzsee
Lecture Hall 02, House 6, August-Bebel-Str. 89, 14482 Potsdam

- 9:00 – 9:15 Welcome: **Dr. Burkhard Schulz**
Deputy Spokesperson MacroBio Graduate School
- 9:15 – 10:00 **Prof. Marcus Frohme**
Institute for Applied Biosciences,
Technical University of Applied Sciences Wildau
New concepts for vaccines and tumour therapeutics at TUAS Wildau
- 10:00 – 10:45 **Dr. Claus Duschl**
Department of Cellular Biotechnology,
Fraunhofer IZI
Novel approaches for the noninvasive processing and monitoring of cells
- 10:45 – 11:15 **Coffee Break**
- 11:15 – 12:00 **Prof. Ursula Anderer**
Cell Biology,
BTU Cottbus-Senftenberg
Chondrogenic microtissues – Engineering strategies and application possibilities
- 12:00 – 12:45 **Prof. Frank Hufert**
Institute of Microbiology and Virology,
Medizinische Hochschule Brandenburg
Strategies of immune evasion: Different viruses – different tricks
- 12:45 – 13:45 **Lunch Break**
- 13:45 – 14:05 **Magda Ferraro**
Institute of Chemistry and Biochemistry,
Freie Universität Berlin
Core – multishell architectures from epoxide monomers for drug delivery
- 14:05 – 14:25 **Richard Neumann**
Institute of Biomaterial Science, HZG
3D-printing: An introduction to process techniques and scientific application

SUMMER SCHOOL 2016
HELMHOLTZ GRADUATE SCHOOL
FOR MACROMOLECULAR BIOSCIENCE

Program

- 14:25 – 14:45 **Christian Schulz**
Institute of Biomaterial Science, HZG
Monolayer formation and shear-resistance of human vein endothelial cells on gelatin-based hydrogels with tailorable elasticity and degradability
- 14:45 – 15:05 **Yi Jiang**
Institute of Biomaterial Science, HZG
Shape-memory polymers as active substrates for printable biology on 3D-microstructures
- 15:05 – 15:35 **Coffee Break**
- 15:35 – 16:30 Summary of the Day and Scientific Challenge

Contact MacroBio Coordination Office

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Summer School 2016 is held in cooperation with the BioInterfaces International Graduate School of the Karlsruhe Institute of Technology



SUMMER SCHOOL 2016
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HELMHOLTZ-ZENTRUM GEESTHACHT

Helmholtz Graduate School for Macromolecular Bioscience Summer School 2016

Biomaterial Interfaces –
Where Biology meets Chemistry

→ 19 - 23 September 2016 //



Introduction

The Helmholtz Graduate School for Macromolecular Bioscience – a cooperation between the Institute of Biomaterial Science of the Helmholtz-Zentrum Geesthacht, Freie Universität Berlin and University of Potsdam – holds its first joint Summer School with the BioInterfaces International Graduate School of the Karlsruhe Institute of Technology.

With this year's focus on "Biomaterial Interfaces – Where Biology meets Chemistry", the Summer School 2016 is concentrated on the synthesis and processing of polymer-based biomaterials and the investigation of their performance within the biological system. The understanding of the complex processes at the interface between a polymer and the living system are crucial for improving the design of biomaterials for future medicine and biotechnology.

The Summer School program is designed to provide participants with a comprehensive insight into the Graduate Schools' interdisciplinary research fields. It is an important yearly forum, not only for PhD students, to meet with selected guest speakers and to discuss their own research in an expert setting. The five-day program of lectures, project presentations and scientific challenges will be held at three different scientific locations of the Berlin-Brandenburg region and is conducted in English. It includes a team event and the awarding of the best Summer School PhD presentation.

On Thursday, 22 September 2016, a special symposium on "Technology and Medicine" is embedded in this year's Summer School program. The session features keynotes from internationally recognized scientists and provides a great opportunity to discuss future trends in Technology and Medicine.

Prof. Nan Ma
Spokesperson

Dr. Burkhard Schulz
Deputy Spokesperson

Helmholtz-Zentrum
Geesthacht
Zentrum für Material- und Küstenforschung

Program

Monday, 19 September 2016

Institute of Biomaterial Science

Helmholtz-Zentrum Geesthacht (HZG)

Lecture Hall 103, House M, Kantstr. 55, 14513 Teltow

9:00 – 9:15 Opening and Welcome: **Prof. Nan Ma**
Spokesperson MacroBio Graduate School

9:15 – 10:00 **Prof. Andreas Taubert**
Institute of Chemistry, University of Potsdam
Surfaces, interfaces, and gels for bioinspired mineralization: Elucidating some basics steps of bio- and bioinspired mineralization

10:00 – 10:45 **Dr. Marie Weinhart**
Institute of Chemistry and Biochemistry,
Freie Universität Berlin
From surface design parameters to cell culture applications

10:45 – 11:15 **Coffee Break**

11:15 – 12:00 **Prof. Bernd Schmidt**
Institute of Chemistry, University of Potsdam
Olefin metathesis – From macromolecular roots to applications in the synthesis of small molecules

12:00 – 12:45 **Prof. Mirosława El Fray**
Polymer Institute, West Pomeranian
University of Technology Szczecin
Injectable photocurable networks for soft tissue engineering

12:45 – 13:45 **Lunch Break**

13:45 – 14:05 **Sebastián Hinojosa**
Institute of Chemistry and Biochemistry,
Freie Universität Berlin
Amphiphilic oxacyclen derivatives and their copper complexes for the development of metal based artificial proteases

14:05 – 14:25 **Wan Yan**
Institute of Biomaterial Science, HZG
The influence of thermal treatment on the morphology in differently prepared films of oligodepsipeptide-based multiblock copolymers

14:25 – 14:45 **David Feldmann**
Institute of Physics and Astronomy,
University of Potsdam
How to manipulate particle assemblies by light using azobenzene surfactant

Program

14:45 – 15:05 **Quanchao Zhang**
Institute of Biomaterial Science, HZG
Electrospun micro-scale objects of copolyether-sterurethane with shape-memory properties

15:05 – 15:35 **Coffee Break**

15:35 – 16:30 Summary of the Day and Scientific Challenge

Tuesday, 20 September 2016

Institute of Biomaterial Science

Helmholtz-Zentrum Geesthacht (HZG)

Lecture Hall 103, House M, Kantstr. 55, 14513 Teltow

9:00 – 9:05 Welcome

9:05 – 9:45 MacroBio Members' Assembly

10:00 Departure Team Event

11:30 Team Event "Escape Room"

Wednesday, 21 September 2016

Berlin-Brandenburg Center for Regenerative Therapies (BCRT)
Charité Campus Virchow-Klinikum (CVK)
Auditorium (room 0.0045), Föhrer Str. 15, 13353 Berlin

10:00 – 10:15 Welcome: **Dr. Christian Wischke**
Institute of Biomaterial Science,
Helmholtz-Zentrum Geesthacht (HZG)

10:15 – 11:00 **Prof. Ute Schepers**
Institute of Toxicology and Genetics,
Karlsruhe Institute of Technology
3D-artificial blood vessels on a chip

11:00 – 11:45 **Prof. Burkhard Luy**
Institute for Biological Surfaces 4,
Karlsruhe Institute of Technology
Basic introduction into the study of interactions using NMR spectroscopy

11:45 – 12:45 **Lunch Break**

12:45 – 13:30 **Prof. Katja Hanack**
Institute of Biochemistry and Biology,
University of Potsdam
Generation of monoclonal antibodies – Challenges and risks

13:30 – 14:15 **Dr. Manfred Gossen**
Institute of Biomaterial Science, HZG
From gene to genome engineering

14:15 – 14:45 **Coffee Break**

Program

14:45 – 15:05 **Tanu Srivastava**
Institute of Functional Interfaces,
Karlsruher Institute of Technology
Investigating the role of adsorbed protein layer properties in platelet adhesion and activation at biomaterial surfaces

15:05 – 15:25 **Shuo Zhou**
Institute of Biomaterial Science, HZG
Quantification of adherent platelets on material surfaces

15:25 – 15:45 **Seyed Mohsen Jebreili Khadem**
Institute of Chemistry, University of Potsdam &
Institute of Physics, Humboldt-Universität zu Berlin
Novel theoretical advances in fluorescence correlation spectroscopy applied to experimental data from in vitro and in vivo systems

15:45 – 16:05 **Zhengdong Li**
Institute of Biomaterial Science, HZG
Micro-scale roughness promotes VEGF secretion of human adipose-derived mesenchymal stem cells via integrin mediated FAK signaling pathway

16:05 – 16:35 **Coffee Break**

16:35 – 17:35 **Dr. Christoph Feest**
Innovation Platform, BCRT
Publishing vs patenting – Why, when and how to protect your research: An introduction to intellectual property

17:35 – 18:00 Summary of the Day and Scientific Challenge

Thursday, 22 September 2016

University of Potsdam – Campus Griebnitzsee
Lecture Hall 02, House 6, August-Bebel-Str. 89, 14482 Potsdam
Symposium on "Technology and Medicine"

9:00 – 9:15 Welcome: **Prof. Andreas Lendlein**
Director Institute of Biomaterial Science,
Helmholtz-Zentrum Geesthacht (HZG)

9:15 – 10:00 Keynote: **Prof. Avi Schroeder**
Department of Chemical Engineering,
Technion – Israel Institute of Technology
Personalized nano-medicine: Cancer and other maladies

10:00 – 10:45 Keynote: **Prof. Giuseppe Battaglia**
Department of Chemistry, University College London
The Physics of targeting: Combining long- and short-ranged interaction to home cancer cells

Program

10:45 – 11:15 **Coffee Break**

11:15 – 11:35 **Philipp U. Bastian**
Institute of Chemistry, University of Potsdam
Multiplexed targeting of cells and tissue – Novel surface-modulated upconversion nanoparticles for biosensing and -imaging

11:35 – 11:55 **Burcu Kepsutlu**
Helmholtz-Zentrum Berlin
Imaging the interaction between cells and nanoparticles with biologically relevant coating via soft X-Ray tomography

11:55 – 12:40 Keynote: **Prof. Fabian Kieβling**
Institute for Experimental Molecular Imaging,
University Hospital Aachen
Nanoparticles as diagnostic and theranostic agents

12:40 – 13:40 **Lunch Break**

13:40 – 14:00 **Philipp Lohmann**
Institute of Neuroscience and Medicine 4,
Forschungszentrum Jülich
Multimodal evaluation of bone regeneration induced by a 3D-architected hydrogel in a critical-size calvarial defect model

14:00 – 14:20 **Nadia Brunacci**
Institute of Biomaterial Science, HZG
Particulate oligodepsipeptide-based carriers with high loads of dexamethasone for topical treatment of inflamed skin

14:20 – 15:05 Keynote: **Prof. Kristopher Kilian**
Dept. of Materials Science and Engineering,
University of Illinois at Urbana-Champaign
Engineering hydrogels for guiding cell decision making

15:05 – 15:35 **Coffee Break**

15:35 – 16:20 Keynote: **Prof. Stephanie Bryant**
Chemical and Biological Engineering,
University of Colorado at Boulder
Understanding the mechanisms driving the foreign body response to implanted synthetic hydrogels

16:20 – 16:40 **Gowthamy Venkidasubramonian**
Institute of Biological Interfaces,
Karlsruhe Institute of Technology
Surface-initiated controlled radical polymerizations of MEDSAH zwitterionic monomer for human embryonic stem cell culture